FORECASTING MONTHLY INFLATION IN THE PHILIPPINES

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FOREWORD

Inflation, in recent years, has become a concern not only of national policymakers but also of individual households. The unprecedented rise in the prices of goods and services in the country in 1984 had invariably affected many sectors of society and understandably made planners and decision-makers more concerned about closely monitoring price increases and keeping them down to a minimum.

This Monograph Series No. 10 features a model for forecasting domestic inflation on a monthly basis. The model was developed by Roberto S. Mariano and associates at the Philippine Institute for Development Studies (PIDS) with the aim of having it adopted and used by the National Economic and Development Authority (NEDA) and other interested parties for short-term forecasting purposes.

The Monograph describes a statistical procedure for forecasting monthly inflation as measured by changes in the consumer price index (CPI) for the entire Philippines. The procedure centers around a statistically estimated price equation which explains the dynamic behavior of monthly CPI levels in terms of their own past values and cost-push and demand-pull factors.

As a response to an immediate concern, this central price equation offers the novelty of its being of a short-term nature and its incorporation of institutional realities, such as the inclusion of a dollar blackmarket premium. It is hoped that the model will be useful in anticipating inflationary movements and in instituting the appropriate policy adjustments that could ultimately assist in lessening the woes of the consuming public.

FILOLOGO PANTE, JR.
President

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FORECASTING MONTHLY INFLATION IN THE PHILIPPINES

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1. INTRODUCTION

The current economic crisis in the Philippines has spawned record-high inflation rates since December 1983. After hovering in the 6-10 percent range for the first ten months of 1983, Philippine domestic prices (based on a comparison with year-ago levels) rose by 17 percent in November and 26 percent in December. Since then, the monthly inflation rates [1/] have continued to climb, from 33 percent in January to 64 percent in October. It was only in November 1984 that the monthly inflation rate finally decelerated (to 61 percent) — and this mostly due to the fact that prices for November of the previous year are already high to start with. Beyond November, the monthly inflation rates continued to slow down: 51 percent in December, 45 percent in January, 42 percent in February, 40 percent in March, 37 percent in April, and 35 percent in May, 1985. (The CPI *level* actually went down in April, 1985!)

Inflationary pressures persisted throughout most of 1984 in the face of recent political developments, continuing balance of payments difficulties, uncertainties concerning the exchange rate, and fluctuations in money supply. In the second half of 1984, as monetary authorities moved to meet IMF conditionalities for the approval of the standby credit loan, the JOBO bills, offered at record high interest rates, helped "siphon off excess liquidity" as the economy went into a recession. By the end of the first quarter of 1985 — with a stabilized exchange rate (at least temporarily), declining oil import costs, and rolled-back domestic prices of petroleum products — the specter of an inflation spiral appeared to have dissipated momentarily. As new developments occur, such as the realignment of the peso, the contraction or expansion of money supply, or the adjustments in the prices of foodstuffs and petroleum products, an adequate monitor on the likely consequent movements in domestic consumer prices is of particular interest to policymakers and ordinary laymen alike.

[1/] Throughout this paper, the phrase "monthly inflation rate" (or MIR) is used to refer to the percentage change in the Consumer Price Index (CPI) for the month relative to the CPI for the same month of the previous year. Another statistic of interest would be month-to-month changes in prices, namely, "monthly percentage changes" or PCM. As can be seen from the last column of Table 1, the CPI continuously increased on a month-to-month basis until March 1985 with peaks of 6 to 8 percent in November 1983 — January 1984, and 4 percent in November 1984. Monthly percentage changes in CPI have been under one percent since February this year and, as mentioned in the main text, negative in April. Over the first five months this year, CPI grew by 3.5 percent, or at a compounded monthly rate of 0.69 percent. Straight forward for extrapolation gives an estimated monthly inflation rate of 8.6 percent for December this year and an annual inflation rate of 23.9 percent based on a comparison of calculated average CPIs for 1984 and 1985. The movements of CPI, MIR, and PCM from January 1983 to May 1985 are plotted in Figures 1-3.

Table 1
CPI Levels, Monthly Inflation Rates, And Monthly Percent Change: January 1983 – May 1985

MONTHLY	CPI ACTUAL	INFLATION RATE	MONTHLY % CHANGE
1983 .01	377.00	6.80	.61
.02	378.90	6.60	.50
.03	379.80	6.30	.24
.04	381.70	6.20	.50
.05	384.40	6.60	.71
.06	389.00	7.30	1.20
.07	389.30	7.90	2.39
.08	405.50	9.10	1.81
.09	407.20	9.10	.42
.10	412.30	10.30	1.25
.11	437.60	16.80	6.14
.12	472.40	26.10	7.95
1984 .01	502.54	33.30	6.38
.02	517.73	36.64	3.02
.03	529.18	39.33	2.21
.04	537.20	40.74	1.52
.05	546.23	42.10	1.68
.06	580.54	49.24	6.28
.07	632.46	58.79	8.94
.08	650.22	60.35	2.81
.09	666.10	63.58	2.44
.10	675.43	63.82	1.40
.11	702.65	60.57	4.03
.12	712.52	50.83	1.40
1985 .01	729.99	45.26	2.45
.02	736.73	42.30	.92
.03	739.74	39.79	.41
.04	736.18	37.04	−.48
.05	737.36	34.99	.16

Figure 1
CPI: January 1983 – May 1985

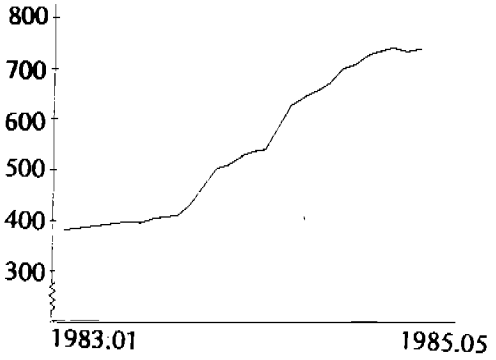


Figure 2
Monthly Inflation Rates: January 1983 – May 1985

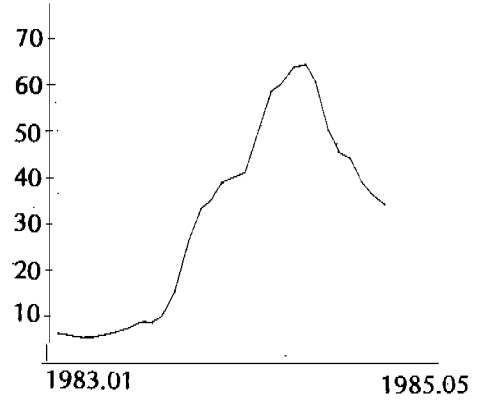
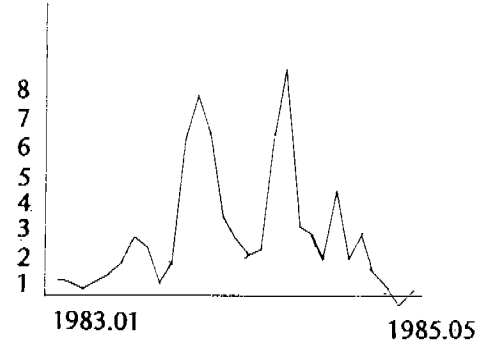


Figure 3
Monthly Percent Changes in CPI: January 1983 – May 1985



In this paper, we develop a statistical procedure for forecasting inflation rates, on a monthly basis, as measured from fluctuations in the consumer price index (CPI) for the entire Philippines. Various theories of inflation have been developed and discussed extensively in the economics literature. The nomenclature for these theories relate to the factors emphasized by the theories as explaining inflation. The Keynesian demand-pull theory considers an excess demand framework through a savings-investment gap and treats money as secondary in the inflation process. The monetarist, or quantity theory, on the other hand, looks primarily at the adjustment process which causes prices to increase as money supply expands and larger cash balances induce increased demand for goods and/or alternative assets. The structuralist theory focuses on sectoral imbalances which give rise to cost push, from such factors as wages or import prices or availability of working capital.

These theories are not inherently inconsistent with each other. Each simply emphasizes different elements in a complex system. It is not our intention here to test these theories against Philippine data. Our main objective is to forecast inflation. To do so, we take an eclectic approach and go through an empirical process to identify those factors, among those suggested by these theories that serve as good indicators for likely movements in prices in the Philippines.

The main ingredient in our forecasting procedure is a regression equation which explains monthly CPI levels in terms of its own past values (up to a lag of two months), the average wholesale posted price of petroleum products as determined by the Board of Energy, a peso-denominated tariff-adjusted import price index for non-fuel imports, a U. S. dollar black market premium, a peso-denominated export price index, total domestic liquidity relative to real output, the legislated minimum wage and cost-of-living allowance, changes in the price ceilings on food items imposed by the Price Stabilization Council, and the effective rate on 91-day treasury bills.

The structure of this price equation estimated over the period January 1972 — March 1985 is discussed further in Section 2. The model search procedure which led us to this specification is outlined in Section 3. The equation can be thought of as having been derived from a reduction of an autoregressive-moving average process with systematic factors (ARMAX) for CPI. Our validation of the model, in terms of its elasticity properties and ex-post forecasting performance, is discussed in Section 4. The exogenous assumptions for our forecasting exercise are summarized in Section 5. Finally, the forecasts of monthly inflation rates for June-December 1985, as calculated from our model, are presented in Section 6. Assuming a 2 percent decline in real GNP for 1985, a lowering of the effective yield of treasury bills to 26 percent by the end of this year, an upward adjustment of the peso-dollar rate to ₱20/$1 by the last quarter of this year, and a 13 percent end-of-year growth in total liquidity, we project progressively de-

clining monthly inflation rates from 27.1 percent in June and 17.2 percent in July to 7.7 percent in December. These projected values imply an annual inflation rate of 23.3 percent for 1985. If we consider a 3 percent decline in real output and a bigger deterioration in the exchange rate, to say, P24/$1 in the fourth quarter, our simulations result in inflation rates of 17 percent for the month of December and 27.1 percent for 1985.

2. THE PRICE EQUATION

Our forecasting procedure centers around a statistically estimated price equation which explains the dynamic behavior of monthly CPI levels [2/] in terms of its own past values and, as economic theory suggests, cost push and demand-pull factors. More specifically, the price equation relates monthly CPI to the following explanatory variables:

1. the values of CPI itself in the two immediately preceding months;
2. the average wholesale posted price of petroleum products as determined by government policymakers;
3. a black market premium for the U.S. dollar, measured in terms of the Hongkong peso-dollar banknote rate relative to the official exchange rate;
4. a peso-denominated import price index for non-fuels, adjusted for tariffs;
5. total domestic liquidity relative to real output, with lagged effects extending up to three months;
6. a peso-denominated overall export price index;
7. the legislated minimum wage for the national capital region;
8. the interest rate on 91-day treasury bills; and
9. price ceilings on food items under price control.

The price equation, estimated by ordinary least squares [3/] — over the period January 1972 — March 1985 is presented in Table 2. Table 3 provides a detailed definition of the regressors and other related variables in the price equation.

[2/] Price equations are estimated more commonly in terms of first differences or percentage changes over time. A sequel to this paper will discuss the results of our experiments with regressions for percentage changes, specifically in terms of Log (CPI/CPI (−1). The use of equations based on quarterly, semestral, or annual, instead of monthly, data for longer range forecasting is also considered in the sequel.

[3/] Some of the explanatory variables may be simultaneous with CPI - notably, the money supply, interest rate, and exchange rate variables. Nevertheless, since our interest is to estimate the conditional expectation of inflation given values of these variables, ordinary least squares will provide a statistically consistent procedure.

Most of the regression runs in this project, including the price equation reproduced in Table 2, are done using MICRO-REG, a micro-software package for econometric analysis and model simulation being developed currently at the Philippine Institute for Development Studies (PIDS).

Table 2
The Price Equation

DEPENDENT VARIABLE:
3 MONCPI

	INDEPENDENT VARIABLES	REGRESSION COEFFICIENT	STD. ERROR OF REG. COEF.	COMPUTED T VALUE	ELASTICITY AT MEANS
1	CONSTANT	−.79569E+01	.54104E+01	−1.47068	
2	ERBMERP	.42427E−01	.50363E−01	.84243	.01683
4	LAGCPI1	.97448E+00	.58538E−01	16.64685	.95988
5	LAGCPI2	−.29286E+00	.55370E−01	−5.28920	−.28410
6	PMOILDP	.63435E−01	.19825E−01	3.19975	.04493
15	PMI	.72317E+01	.17232E+01	4.19667	.06833
14	PXPEXP	.28961E−01	.95256E−02	3.04038	.02788
13	TOTTGQ3	.54133E+01	.93122E+00	5.81308	.09725
7	DAY91	.92480E+00	.15896E+00	5.81774	.04484
8	WLNANCR	.60864E+00	.19761E+00	3.07992	.04867
11	PCFOOD3L	.98363E+00	.48235E+00	2.03926	.00375
16	DUM85	.18886E+02	.29496E+01	6.40306	.00132

MULTIPLE CORRELATION	.99981
R−SQUARED	.99963
ADJUSTED R−SQUARED	.99960
STD. ERROR OF ESTIMATE	3.00227
DURBIN−WATSON STATISTIC	1.84914
RHO ESTIMATE	.07462

ANALYSIS OF VARIANCE FOR THE REGRESSION

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARES	F VALUE
REGRESSION	11	3563629.00000	323966.28125	35941.92187
ERROR	147	1325.00000	9.01361	
TOTAL	158	3564954.00000		

Table 3
Variable Definitions for the Price Equation

CPI	=	Monthly consumer price index for the Philippines, in percent (base year: 1972).
PMOILDP	=	Average wholesale *posted* price of petroleum products, in centavos per liter, as regulated by the Board of Energy.
ERBMERP	=	100 * Hongkong Banknote Rate (P/$)/Official Exchange Rate (P/$).
TOTTGQ3	=	TLG + TLG(−1) + TLG(−2) + TLG(−3).
TLG	=	TL/GNPSEM.
TL	=	Total domestic liquidity, in billion pesos.
GNPSEM	=	Semestral real GNP, in 1972 billion pesos.
PMI	=	PMQUSNF * ER (month/ER(1972)) * (1 + TARIFF) / (1 + TARIFF (1972)).
PMQUSNF	=	Dollar-denominated import price index for non-fuels (in decimal; base year: 1972).
TARIFF	=	Simple average (across items) of tariffs on imports plus additional ad valorem duties on imports, in decimal.
ER(month)	=	Average exchange rate for the month, in P/$1.
TARIFF (1972)	=	.45
ER(1972)	=	P6.671/$1.
PXPEXP	=	Export price index for all commodities (peso-denominated, base year: 1972).
91-DAY	=	Interest rate on 91-day treasury bills.
WLNANCR	=	Legislated minimum wage for the national capital region.
PCFOOD3L	=	$\text{Log}\left(\sum_{i=1}^{8} w_i \cdot PF_i / \sum_{i=1}^{8} w_i\right)$
PF_i	=	Percentage increase in the price ceiling for the ith food item under price control, relative to the price ceiling in February 1980.
w_i	=	Weight in the CPI basket of the ith food item under price control.
DUM85	=	1 for 1985; 0 otherwise.

This price equation parallels earlier models for Philippine inflation in that it incorporates standard cost-push and demand-pull variables such as items 2, 4, and 5. The novel features of this equation come from the short-term nature of the equation, the incorporation of institutional realities (through items 2, 7, and 9), and the presence of the dollar black market premium. The equation deals with inflation on a monthly basis while most studies, except for the Input-Output Price Model developed at the National Economic and Development Authority (NEDA), are more concerned with long-term annual price movements. For examples, see Constantino (1982), Bautista (1983), Huda (1984), and Lim (1985). The black market premium for the dollar serves to reflect the rising costs of imports sourced through pre-paid letters of credit and also to capture inflationary expectations fueled by political and financial developments in 1983 and 1984.

The first important variable in the price equation is the price of petroleum products. The variable we have used (PMOILDP) is the average wholesale posted price of petroleum products as regulated by the Board of Energy. The list of products include regular and premium gasoline, diesel, kerosene, avturbo, LPG, fuel oil, solvents, and asphalts. The weights used for averaging come from volume of sales. The posted prices, as determined by the Board of Energy, consists of direct oil company take, taxes, and currently, an oil price stabilization fund.

We actually considered two alternative variables to reflect fuel price changes – the import price of crude oil and the average wholesale posted price of petroleum products. Given our price control system, we would expect the latter variable to have a more significant effect on price changes. Higher costs of importing crude oil would impact on consumer prices only to the extent that government authorities would allow these increases to filter down to the domestic prices of petroleum products. Also, in the absence of any fluctuations in the import price of crude oil, domestic prices can still increase as a consequence of changes in the exchange rate or in the tax (for example, note the oil price increases in May 1984) or special fund components of the wholesale posted price.

Another important variable in the price equation is the dollar black market premium (ERBMERP) which serves as a proxy for the inflationary effects of developments in the political scene and the scarcity of foreign exchange. Versions of the price equation without this variable actually show reasonably good diagnostic statistics: high multiple correlation, mostly significant t-values, and a Durbin-Watson statistic close to 2. However, they fail dramatically in tracking the increase in inflation rates in November and December of 1983.

Total liquidity relative to real output (TLGNP) appears in the price equation, through the four-month moving sum TOTTGQ3, as a proxy for excess demand in the economy – with additional inflationary pressures on prices arising if total liquidity expands faster than real output. Further-

more, these pressures would persist over time and hence, TLGNP is expected to have lagged effects on prices. The choice of the particular lag structure, leading to the construction of the variable TOTTGQ3, is based on the various regressions and lag structures that was tried.

Another explanatory variable in the price equation is PMI, a peso-denominated import price index for non-fuel items. This is derived from the quarterly dollar-denominated import price index for non-fuels which is available from the National Census and Statistics Office (NCSO). To get PMI, the dollar-denominated index is converted into a peso basis which incorporates fluctuations not only in the official exchange rate but also in import duties. The adjustment for import duties is done through the variable TARIFF which is the sum of a basic rate, equal to the simple average (across items) of import duties, and additional ad valorem duties. Again, we settled on this variable only after some considerable experimentation with alternatives. For one thing, we tried a separate treatment of the various components in PMI; namely, the dollar cost of imports, the exchange rate, and import duties. Introduction of these three as separate regressors yielded unsatisfactory results. We also tried using the *monthly* series on a dollar-denominated index for import prices of non-fuels. This was calculated from the worksheets made available to us by NCSO. The regression results were quite deficient — mainly because this monthly series fluctuates erratically due to its sensitivity to the composition of imports for the month.

The food price control variable, PCFOOD3L, is included in the price equation because of its role in capping inflationary pressures in 1983 and 1984. PCFOOD3L is the natural logarithm of a weighted average of the percentage increases (relative to February 1980) in the price ceilings for the food items controlled by the Price Stabilization Council. The items together with their weights taken from the CPI basket are listed in Table 4. More details on how these price ceilings moved in 1983 and 1984 are provided in Section 5.

Table 4
Food Items Under Price Control and Their Weights in the CPI Basket

Commodities	CPI Weight (in Percent)
Rice	11.63
Corn Grits	3.23
Pork Cuts	2.50
Chicken	1.82
Sugar	1.75
Eggs	1.36
Canned Liquid Milk	1.25
Canned Fish	.59
TOTAL	24.13

The data base for these variables for the period January 1972 to December 1984 is contained in Appendix 1. Time series plots for levels and monthly percentage changes in the key variables discussed in this section are presented in Figures 4–15.

3. MODEL SEARCH PROCEDURE

Given our short-run forecasting objectives, we might consider initially fitting an autoregressive-moving-average process to our CPI-series a la Box-Jenkins.

The sample autocorrelation function for CPI, plotted in Figure 16, shows a slow tendency towards decay and suggests non-stationarity. Differencing CPI once appears to suffice as shown in Figure 17. There, the sample autocorrelation function for the first difference of CPI shows a rapid decline to zero beyond the second order. Thus, the model we would try to fit is the ARIMA (p. 1, q) process of the form

$$\Delta y_t = \beta_1 \Delta y_{t-1} + \beta_2 \Delta y_{t-2} + \ldots + \beta_p \Delta y_{t-p} + \epsilon_t + \alpha_1 \epsilon_{t-1} + \ldots + \alpha_q \epsilon_{t-q}$$

where

$$\Delta y_t = CPI_t - CPI_{t-1}$$

and

$$\epsilon_t \sim \text{i.i.d } N(0, \sigma^2_{\epsilon}).$$

The simple and partial autocorrelation functions in Figure 17 further suggest a value of 1 for q and about 5 or 6 for p. The fitted equations (calculated with MICRO TSP) for selected values of p and q are summarized in Tables 5–7.

The above modelling effort is illustrative, at best, since our aim is to base our inflation forecasts not only on past CPI values, but also on systematic factors affecting prices. Indeed, it could very well be that the non-stationarity detected earlier in the actual CPI levels may be due to fluctuations in such systematic factors. The strong growth trend in actual CPI (see Figure 4) tends to support this possibility.

Following this line of argument, a natural model to fit would be a linear regression model with serially correlated errors generated by an autoregressive-moving average process, namely:

$$y_t = \gamma' x_t + u_t, \qquad (1)$$

$$u_t \sim \text{ARMA } (p, q),$$

Figure 4
CPI (Normalized) in Levels and Percent Change:
1972–1984

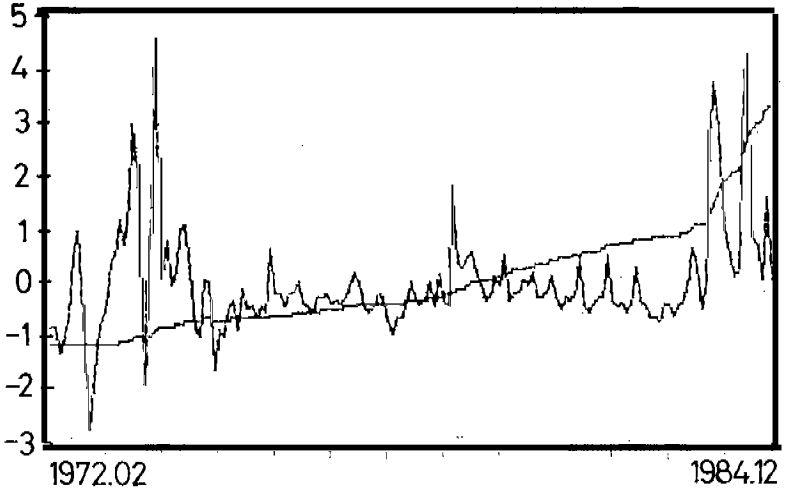


Figure 5
Monthly Percent Changes in CPI:
1972–1984

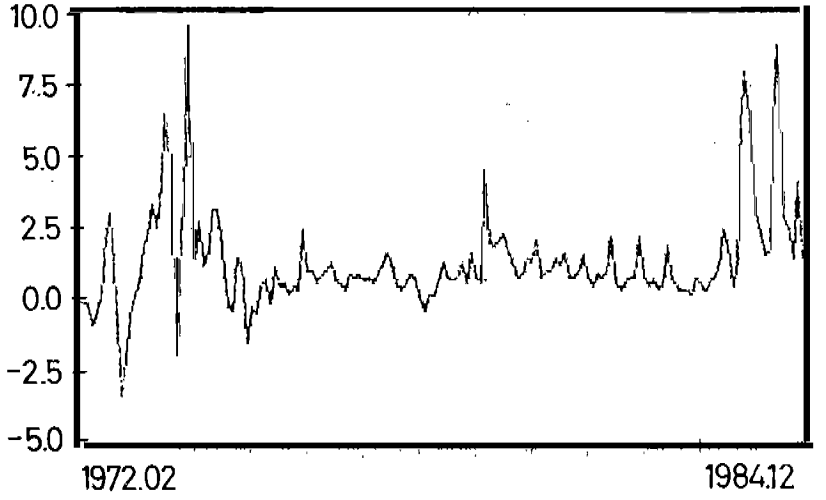


Figure 6
Petroleum Prices (Normalized) in Levels and
Percent Change: 1972–1984

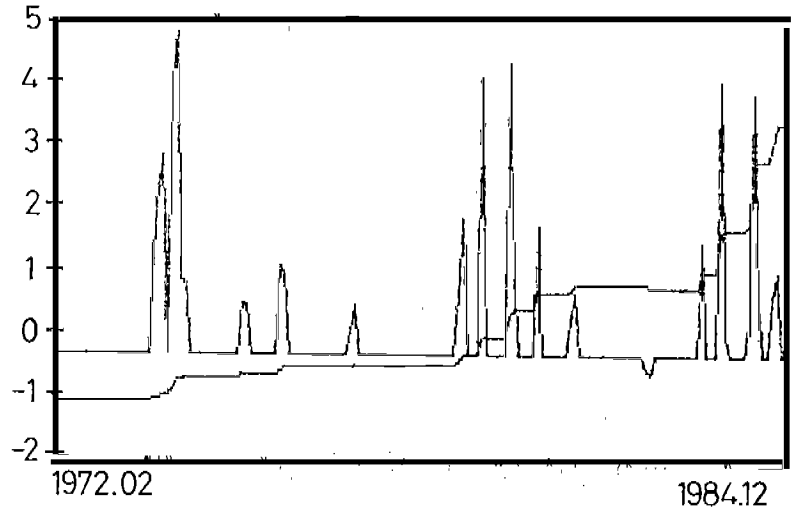


Figure 7
Monthly Percent Changes in Petroleum Prices:
1972–1984

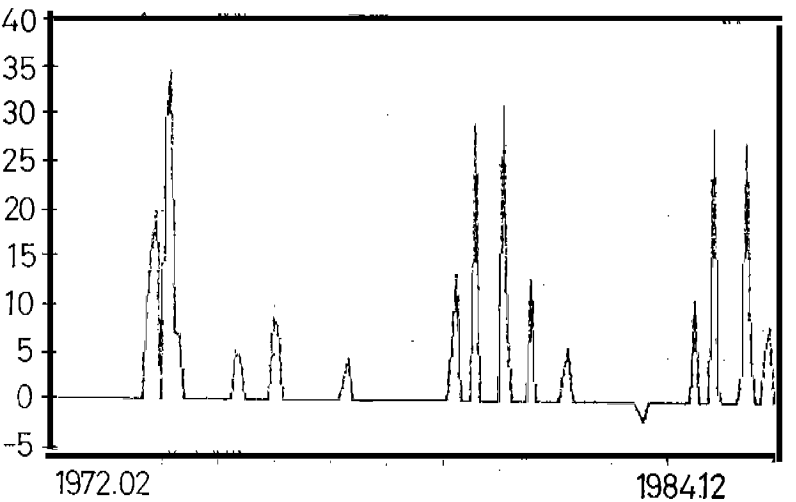


Figure 8
Total Liquidity (Normalized) in Levels and
Percent Change: 1972–1984

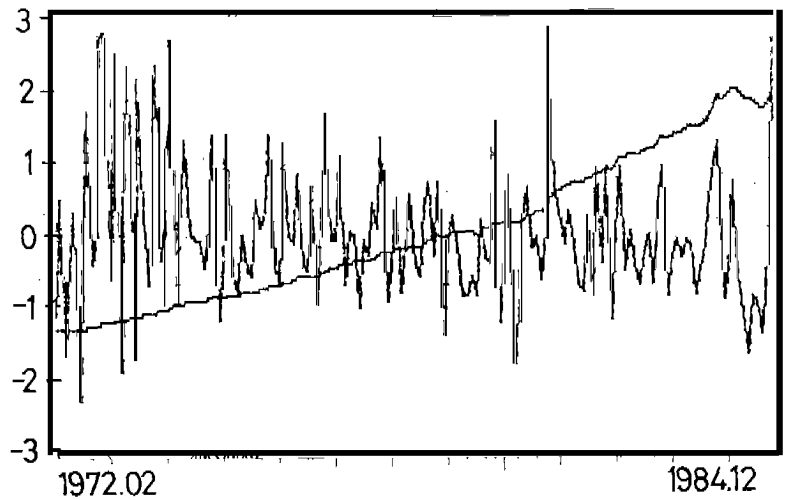


Figure 9
Monthly Percent Changes in Total Liquidity
1972–1984

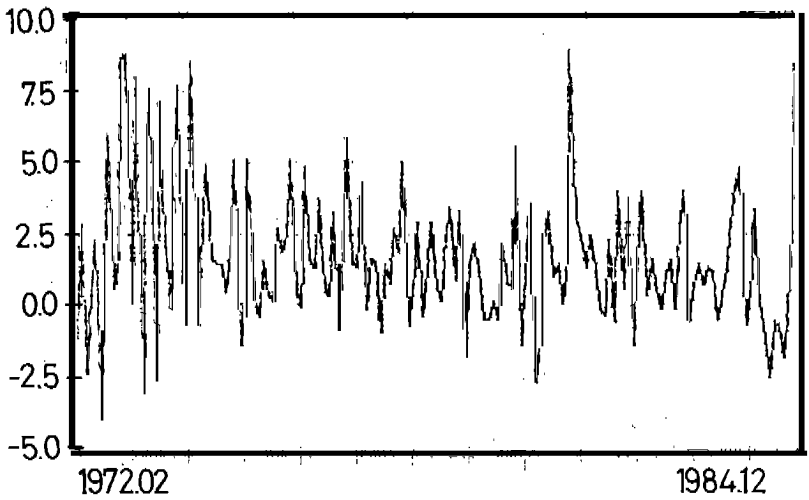


Figure 10
Quarterly Percent Changes in the Dollar—Import Price Index for Non—Fuels (PMQUSNF): 1972—1984

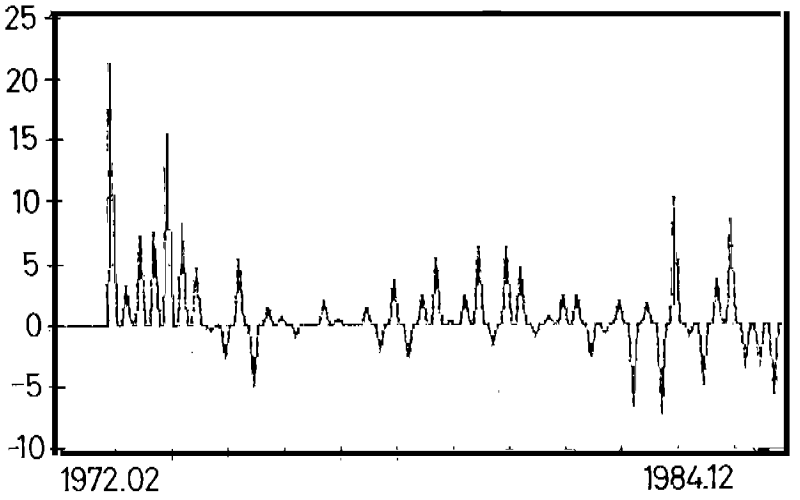


Figure 11
Monthly Percent Changes in the Official Exchange Rate: 1972—1984

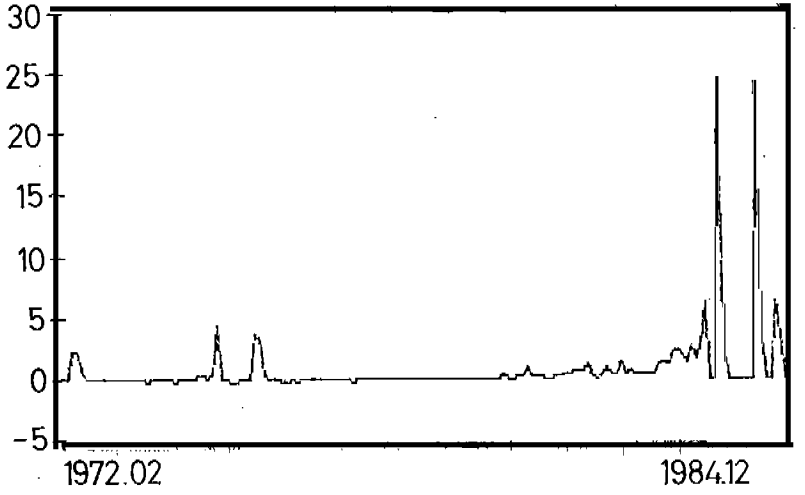


Figure 12
Monthly Percent Changes in the Black Market
Exchange Rate: 1972–1984

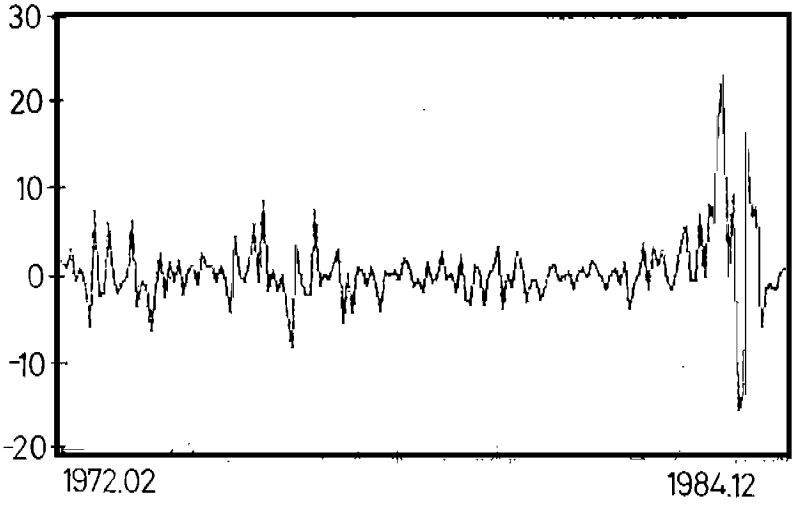


Figure 13
Monthly Percent Changes in Treasury–Bill Rates
1972–1984

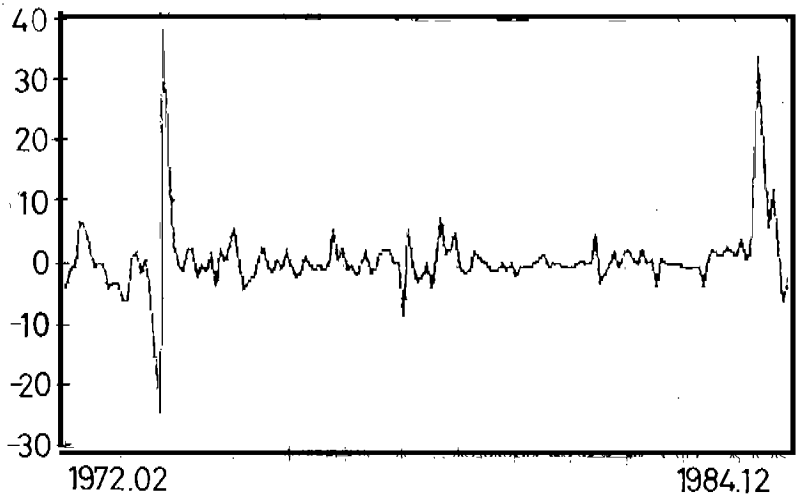


Figure 14
Monthly Percent Changes in Import Tariffs:
1972–1984

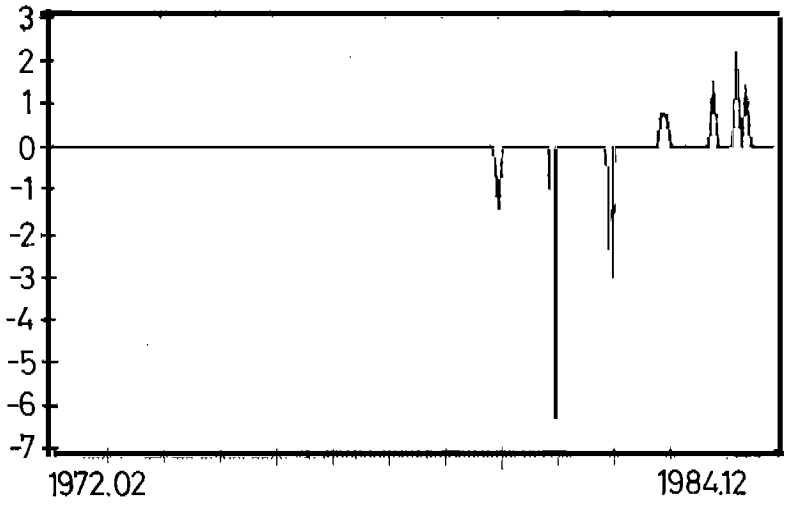


Figure 15
Monthly Percent Changes in the Legislated Minimum Wage:
1972–1984

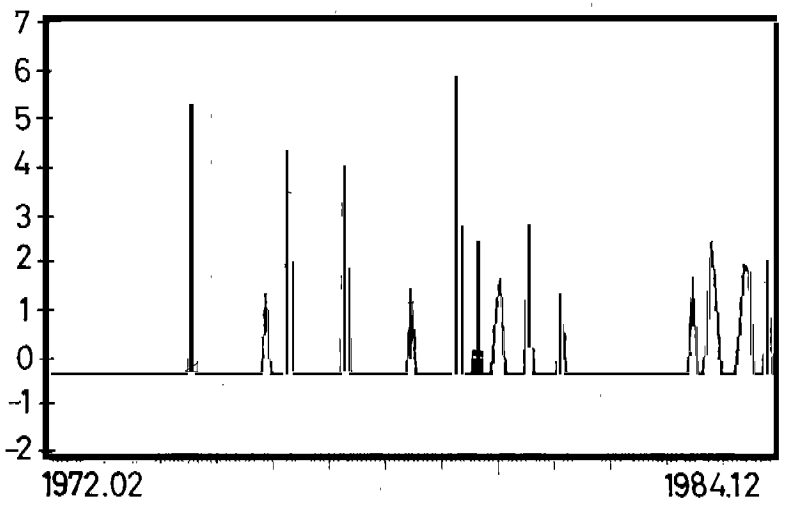


Figure 16
Simple and Partial Autocorrelation Functions*
for CPI Levels: Estimated Over January, 1972–December 1984

SMPL. 1972.01 – 1984.12
156 Observations
IDENT CPI

Autocorrelation	Partial Autocorrelations	ac		pac
**********	**********	1	0.9586	0.9586
*********		2	0.9160	–0.0356
*********		3	0.8756	0.0036
********		4	0.8349	–0.0121
********		5	0.7948	–0.0108
********		6	0.7554	–0.0096
*******		7	0.7223	0.0105
*******		8	0.6929	0.0133
*******		9	0.6635	0.0049
******		10	0.6341	–0.0002
******		11	0.6053	–0.0021
******		12	0.5776	–0.0019
******		13	0.5538	0.0043
*****		14	0.5348	0.0115
*****		15	0.5194	0.0147
*****		16	0.5044	0.0114
*****		17	0.4894	0.0078
*****		18	0.4752	0.0066
*****		19	0.4622	0.0068
****		20	0.4500	0.0064
****		21	0.4381	0.0057
****		22	0.4260	0.0041
****		23	0.4138	0.0027
****		24	0.4016	0.0017
****		25	0.3899	0.0017
****		26	0.3779	0.0006
****		27	0.3658	0.0000
****		28	0.3534	–0.0007
***		29	0.3409	–0.0011
***		30	0.3286	–0.0013
***		31	0.3169	–0.0006
***		32	0.3052	–0.0010

* These are computed with MICRO TSP. We have reason to believe that there are errors in the calculation of the partial autocorrelation function, but this needs further confirmation.

Figure 17
Simple and Partial Autocorrelation Functions*
for First–Order Differences in CPI: Estimated
Over January 1972 – December 1984

SMPL 1972.01 – 1984.12
156 Observations
IDENT DCPI

Autocorrelations	Partial Autocorrelations		ac	pac
*******	*******	1	0.7108	0.7108
*****	*	2	0.4586	–0.0944
****	*	3	0.3531	0.0894
****	**	4	0.4396	0.2365
*****	*	5	0.4721	0.0959
*****	*	6	0.4781	0.1113
****		7	0.4293	0.0475
***	*	8	0.3073	–0.0871
**	*	9	0.1732	–0.0876
**		10	0.1724	0.0245
**		11	0.1946	–0.0188
*	*	12	0.1428	–0.0876
	*	13	0.0288	–0.0831
		14	–0.0240	–0.0220
		15	–0.0170	0.0036
		16	0.0078	0.0148
		17	0.0055	0.0026
		18	–0.0078	0.0066
		19	–0.0357	0.0110
		20	–0.0431	0.0286
		21	–0.0382	0.0152
		22	–0.0063	0.0182
		23	0.0197	0.0208
		24	0.0417	0.0338
		25	0.0021	–0.0217
		26	–0.0101	–0.0031
		27	–0.0083	–0.0094
		28	0.0150	–0.0059
		29	0.0379	0.0069
		30	0.0499	0.0040
		31	0.0202	–0.0286
		32	0.0097	0.0011

*These are computed with MICRO TSP

Table 5
Fitted Equation for ΔCPI $\sim$ ARMA (1, 1)

SMPL 1972.01 -- 1984.12
156 Observations
LS / / Dependent Variable is DCPI
Convergence achieved after 3 iterations

	COEFFICIENT	STANDARD ERROR	T–STATISTIC
C	4.0190909	1.1368932	3.5351525
MA (1)	0.1256682	0.6465059	0.1943806
AR (1)	0.6516555	0.6358913	1.0247908

R–squared	0.511870	Mean of dependent var	3.934744
Adjusted R–squared	0.505489	S.D. of dependent var	7.026006
S.E. of regression	4.940789	Sum of squared resid	3734.944
Durbin–Watson stat	1.962592	Log likelihood	– 469.0537

Table 6
Fitted Equation for $\Delta CPI \sim ARMA(4, 1)$

SMPL 1972.01 – 1984.12
156 Observations
LS / / Dependent Variable is DCPI
Convergence achieved after 12 iterations

	COEFFICIENT	STANDARD ERROR	T–STATISTIC
C	5.8025328	5.4487360	1.0649319
MA (1)	–0.3691125	0.5663045	–0.6517916
AR (1)	1.0212640	0.5587854	1.8276499
AR (2)	–0.2903423	0.2084274	–1.3930142
AR (3)	–0.1717916	0.1039543	–1.6525688
AR (4)	0.3732945	0.0885987	4.2133203

R–squared	0.591619	Mean of dependent var	3.934744
Adjusted R–squared	0.578006	S.D. of dependent var	7.026006
S.E. of regression	4.564168	Sum of squared resid	3124.744
Durbin–Watson stat	1.899018	Log likelihood	–455.1400

Table 7
Fitted Equation for Δ CPI $\sim$ ARMA (6, 1)

SMPL 1972.01 – 1984.12
156 Observations
LS / / Dependent Variable is DCPI
Convergence achieved after 9 iterations

	COEFFICIENT	STANDARD ERROR	T–STATISTIC
C	–7.2939224	8.3968324	–0.8686517
MA (1)	–0.1569138	0.4914713	–0.3192735
AR (1)	0.7097344	0.4875727	1.4556481
AR (2)	–0.1520119	0.1051313	–1.4459235
AR (3)	–0.2484971	0.0857456	–2.8980733
AR (4)	0.5628098	0.0850470	6.6176318
AR (5)	–0.4434534	0.0979497	–4.5273596
AR (6)	0.6123189	0.1020468	6.0003736

R–squared	0.650759	Mean of dependent var	3.934744
Adjusted R–squared	0.634241	S.D. of dependent var	7.026006
S.E. of regression	4.249189	Sum of squared resid	2672.230
Durbin–Watson stat	1.952220	Log likelihood	–442.9378

where y_t is CPI and x_t is a vector of explanatory variables. Assuming that u_t is stationary and invertible, we can further write.

$$u_t = (\beta(L))^{-1} (\alpha(L))\epsilon_t$$

where

$$\beta(L) = 1 - \beta_1 L - \beta_2 L^2 - \ldots - \beta_p L^p$$

$$\alpha(L) = 1 + \alpha_1 L + \alpha_2 L^2 + \ldots \alpha_q L^q$$

and L is the lag operator. [4/] This leads to

$$y_t = \gamma' x_t + (\beta(L))^{-1} (\alpha(L))\epsilon_t$$

or

$$\beta(L) y_t = (\beta(L))\gamma' x_t + (\alpha(L))\epsilon_t \qquad (2)$$

To get an equation along the lines suggested in (2), we need a selection procedure for the determination of the variables in x_t and the orders of the polynomial lag operators $\beta(L)$ and $\alpha(L)$. We follow a somewhat simplified sequential and iterative procedure.

First, we set q to zero on the argument that equation (2) can be further reduced to

$$\alpha^{-1}(L)\beta(L) y_t = \alpha^{-1}(L)\beta(L)\gamma' x_t + \epsilon_t \qquad (3)$$

and this can be further approximated by

$$\phi(L) y_t = \theta(L)\gamma' x_t + \epsilon_t. \qquad (4)$$

[4/] Thus, for example,

$$\alpha(L)\epsilon_t = \epsilon_t + \alpha_1 \epsilon_{t-1} + \alpha_2 \epsilon_{t-2} + \ldots + \alpha_q \epsilon_{t-q}.$$

where ϕ (L) and θ (L) are lag polynomials with finite degree.

Next, we proceed to identify x_t through least squares regression of y_t on possible explanatory variables. At this stage, the variables listed in Table 2 (ERBMERP, PXPEXP, PMOILDP, TOTTGQ3, PMI, DAY91, WLNANCR, PCFOOD3L) are identified as explanatory variables. The diagnostic statistics in a regression of y_t on these variables (see Table 8) show mostly significant t-values but also indicate the presence of serial correlation in the error term (through the low Durbin-Watson value.)

Instead of applying generalized least squares to correct for serial correlation, we choose to follow the direction suggested in (4) and run an expanded regression which includes CPI lagged by one month as an additional explanatory variable. The results, summarized in Table 9, still give a significant non-zero value for the first order autoregressive parameter and suggest a further refinement of the equation. [5/] Inclusion of CPI lagged by two months leads to our forecasting equation presented in Table 2. The decision to stop the iteration at this point is based on the fact that the estimated rho-value (for first order autoregression in the errors) is insignificant statistically.

Note that this test detects only a particular type of serial correlation and may, in fact, be an insufficient basis for terminating the last iteration. To check this, we can run additional tests for serial correlation in the residuals of our forecasting CPI-equation. We can also re-estimate our forecasting CPI-equation on the assumption that the disturbance term follows an MA(q) process. These, as well as other diagnostic tests on the residuals, will be discussed in the sequel to the paper.

4. MODEL VALIDATION

4.1. Implied Inflation Elasticities in the Price Equation

[5/] With lagged CPI as an explanatory variable, the Durbin-Watson test is inappropriate for detecting first order autoregressive serial correlation in the errors. An appropriate alternative test is based on Durbin's h statistic.

$$h = r_1 (T/(1-TV))^{1/2}$$

where r_1 is the first order autocorrelation calculated from the least square residuals (approximately equal to (1−DW/2) and V is the least squares estimate of the variance of the estimated coefficient of y_{t-1}. Under the null hypothesis that the first order autoregressive parameter, P is equal to zero, the test statistic h has a limiting standard unit normal distribution. This test is valid even if the list of regressors includes higher-order lags of the dependent variable.

If TV is greater than 1, so that h is not well-defined, an alternative procedure is to regress $\hat{e}_t$ on $\hat{e}_{t-1}$ and the regressors (including the lags of the dependent variable) and test the significance of the coefficient of $\hat{e}_{t-1}$ using standard least squares procedures. One reference for additional details is Judge et al. (1984).

Table 8
Static Regression of CPI on Explanatory Variables

DEPENDENT VARIABLE:
3 MONCPI

	INDEPENDENT VARIABLES	REGRESSION COEFFICIENT	STD. ERROR OF REG. COEF.	COMPUTED T VALUE	ELASTICITY AT MEANS
1	CONSTANT	.10851E+02	.12545E+02	.86502	
2	ERBMERP	−.19408E+00	.11789E+00	−1.64625	−.07980
6	PMOILDP	.21193E+00	.45646E−01	4.64286	.14838
15	PMI	.11580E+02	.40713E+01	2.84422	.11030
14	PXPEXP	.10345E+00	.22152E−01	4.67019	.10074
13	TOTTGQ3	.21729E+02	.14547E+01	14.93692	.39452
8	WLNANCR	.14598E+01	.47351E+00	3.08281	.11692
7	DAY91	.33314E+01	.31705E+00	10.50747	.16334
11	PCFOOD3L	.10629E+01	.11601E+01	.91622	.00388

MULTIPLE CORRELATION	.99864
R−SQUARED	.99728
ADJUSTED R−SQUARED	.99713
STD. ERROR OF ESTIMATE	7.32715
DURBIN−WATSON STATISTIC	.81823
RHO ESTIMATE	.59541

ANALYSIS OF VARIANCE FOR THE REGRESSION

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARES	F VALUE
REGRESSION	8	2891921.00000	361490.12500	6733.28027
ERROR	147	7892.00000	53.68708	
TOTAL	155	2899813.00000		

Table 9
Regression of CPI on Its Own One–Month Lag and Other Explanatory Variables

DEPENDENT VARIABLE:
3 MONCPI

INDEPENDENT VARIABLES	REGRESSION COEFFICIENT	STD. ERROR OF REG. COEF.	COMPUTED T VALUE	ELASTICITY AT MEANS
1 CONSTANT	–.15501E+02	.57555E+01	–2.69330	
2 ERBMERP	.91729E–01	.54415E–01	1.68573	.03772
4 LAGCPI1	.70165E+00	.29225E–01	24.00864	.69104
6 PMOILDP	.37471E–01	.21804E–01	1.71853	.02624
15 PMI	.96428E+01	.18354E+01	5.25386	.09185
14 PXPEXP	.26688E–01	.10477E–01	2.54736	.02599
13 TOTTGQ3	.39185E+01	.98972E+00	3.95921	.07114
8 WLNANCR	.84228E+00	.21481E+00	3.92104	.06746
7 DAY91	.87362E+00	.17570E+00	4.97237	.04283
11 PCFOOD3L	.14549E+01	.52276E+00	2.78303	.00532

MULTIPLE CORRELATION	.99973
R–SQUARED	.99945
ADJUSTED R–SQUARED	.99942
STD. ERROR OF ESTIMATE	3.30006
DURBIN–WATSON STATISTIC	1.41605
RHO ESTIMATE	.29089

ANALYSIS OF VARIANCE FOR THE REGRESSION

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARES	F VALUE
REGRESSION	9	2898223.00000	322024.78125	29569.57031
ERROR	146	1590.00000	10.89041	
TOTAL	155	2899813.00000		

The estimated equation shows a very close fit over the sample period and most of the regression coefficients in the price equation are statistically significant at the five percent level.

In terms of inflationary effects (measured by the elasticity of the monthly *inflation rate* with respect to the variable — i.e., the percentage change in the *inflation rate* due to a one-percent change in the variable), our estimated equation shows that changes in prices of petroleum products and non-fuel imports have the biggest *immediate* impact followed (in descending order of elasticity magnitude) by the interest rate and legislated wage variables, then by the export price index and the liquidity variable, and finally, by the food price control and the dollar black market premium. (Earlier regression results based on estimation periods up to mid-1984 show a relatively higher short-run elasticity for the dollar black market premium and less importance in the interest rate variable. Inclusion of data for the second semester of 1984, when the dollar black market premium practically disappeared as JOBO bills were introduced, leads to the results we report here.) In the *long-run*, however, liquidity assumes a more prominent role. In fact, together with petroleum prices, the liquidity variable shows the highest long-run elasticity. For the remaining variables, the rank-ordering of long-run elasticities follows that for the short-run.

Since monthly inflation rates (P), from our convention, are given by

$$\dot{P} = 100 * (CPI - CPI(-12)) / CPI(-12). \qquad (5)$$

it follows that the elasticity (γ_X) of the inflation rate with respect to a variable x is

$$\gamma_X = \frac{dP/P}{dX/X}$$

$$= \frac{d\,CPI/(CPI - CPI(-12))}{dX/X}, \qquad (6)$$

with the last equality holding if CPI (— 12) is invariant with respect to changes in X. (This is not exactly true in our model because of the dynamic nature of the price equation. Thus, the last expression should, strictly speaking, be taken as an approximation. Its adequacy, especially in the calculation of long-run elasticities, depends on the magnitude of the lagged effects on CPI of a change in X twelve months hence.)

For Table 10, we have used (6) above for short-run elasticities while long-run elasticities (Γ_x) are calculated as follows:

$$\Gamma_x = \gamma_x/(1 - .9745 + .2929) \qquad (7)$$

For total liquidity, the expression in (7) is further multiplied by 4 since liquidity enters the price equation through TOTTGQ3. The argument in calculating long-run elasticities is that in the long-run,

$$CPI = CPI\ (-1) = CPI\ (-2)$$

$$TLGNP = TLGNP\ (-1) = TLGNP\ (-2) = TLGNP\ (-3)$$

Substitute these equalities into the price equation and then use (6) to calculate long-run elasticities.

4.2 *Ex-Post One-Period-Ahead and Multi-period-Ahead Forecasts From the Price Equation*

For further validation, the price equation is subjected to a forecasting exercise over the peiod *January 1983 – May 1985.* Data for April and May, 1985 lie outside the regression period and hence, provide a benchmark for calibrating the forecasting performance of the price equation.

Multi-period forecasts, ranging from one month ahead to six months ahead, are obtained over this period with the use of the price equation. These sets of calculations differ from each other in the way CPI (–1) and CPI (–2) are treated in the price equation. In a one-month-ahead forecast, actual values are used for these variables while in a two-months-ahead simulation, actual CPI (–2) is used but CPI (–1) is first calculated by applying the equation on given initial conditions. In a three-months-ahead forecasts, CPI(–2), CPI(–1), and CPI are sequentially calculated in this order with estimated CPI(–2) as an input in the calculation of CPI(–1), and the calculated values of CPI(–1) and CPI(–2) as inputs for forecasting CPI. Thus, one-month-ahead forecasts come from a one-period static simulation of the equation while forecasts which are two or more months ahead, are generated from sequentially initialized multi-period dynamic simulations of the model. In all these simulations, known actual values of the explanatory variables are used.

The generated forecasts for CPI levels, monthly inflation rates and monthly percentage changes are given in Tables 11 to 16. The one-month-ahead forecasts in Table 11 track adequately the monthly CPI levels *and* the monthly inflation rates including those over the critical period of November 1983 – June 1984. The big jumps in the inflation rate in November and December 1983 and June and July of 1984 are reflected in the forecasts.

Table 10
Estimated Elasticities of the Inflation Rate at December, 1984 Values, Based on the Price Equation in Table 2

EXPLANATORY VARIABLE (X)	SHORT–RUN[1/] ELASTICITY (γ_X)	LONG–RUN[2/] ELASTICITY (Γ_X)	dCPI/dx	DECEMBER 1984 VALUES
CPI				712.52
PMOILDP	.176	.553	.06344	666.5
ERBMERP	.0174	.0546	.04243	98.39
PMI	.192	.603	7.232	6.38
TL/GNPSEM	.0597	.750	5.413	2.647
91–DAY	.138	.434	.9248	35.884
PXPEXP	.0754	.237	.02896	624.89
WLNANCR	.144	.454	.6086	57.0
PCFOOD3L	.0198	.0623	.9836	4.842
CPI (–1)			.9745	
CPI (–2)			–.2929	

[1/] Short-run elasticity of the inflation rate is calculated as in (6):

$$\gamma_X = (dCPI/dX) * (X/CPI - CPI(-12))),$$

[2/] $\Gamma_X = \gamma_X/(1 - .9745 + .2929) = \gamma_X/0.3184$, except for TL/GNPSEM where

$$\Gamma_X = 4\gamma_X/0.3184$$

Table 11
One–Month–Ahead Simulation of the Monthly Inflation Forecasting Model
FORECAST (ONE MONTH AHEAD)

	CPI LEVELS			MONTHLY INFLATION RATES (MIR)			MONTHLY % CHANGES (PCM)		
MONTH	ACTUAL	SIMULATED	% ERROR	ACTUAL	SIMULATED	% ERROR	ACTUAL	SIMULATED	% ERROR
JANUARY '83	377.00	378.67	.44	6.80	7.27	6.95	.61	1.06	72.72
FEBRUARY	378.90	381.86	.78	6.60	7.42	12.37	.50	1.29	156.05
MARCH	379.80	383.90	1.08	6.30	7.47	18.64	.24	1.32	455.35
APRIL	381.70	383.08	.36	6.20	6.56	5.81	.50	.86	72.80
MAY	384.40	385.51	.29	6.60	6.94	5.13	.71	1.00	41.22
JUNE	389.00	388.95	−.01	7.30	7.27	−.47	1.20	1.18	−1.17
JULY	398.30	397.35	−.24	7.90	7.65	−3.11	2.39	2.15	−10.20
AUGUST	405.50	405.50	.00	9.10	9.12	.24	1.81	1.81	−.06
SEPTEMBER	407.20	411.12	.96	9.10	10.13	11.32	.42	1.39	230.39
OCTOBER	412.30	421.74	2.29	10.30	12.80	24.23	1.25	3.57	185.13
NOVEMBER	437.60	438.59	.23	16.80	17.11	1.87	6.14	6.38	3.93
DECEMBER	472.40	466.04	−1.35	26.10	24.38	−6.60	7.95	6.50	−18.27
JANUARY '84	502.54	500.16	−.47	33.30	32.67	−1.89	6.38	5.88	−7.89
FEBRUARY	517.73	520.13	.46	36.64	37.27	1.73	3.02	3.50	15.80
MARCH	529.18	526.67	−.47	39.33	38.67	−1.67	2.21	1.73	−21.89
APRIL	537.20	536.10	−.20	40.74	40.45	−.71	1.52	1.31	−13.70
MAY	546.23	545.91	−.06	42.10	42.02	−.20	1.68	1.62	−3.52
JUNE	580.54	581.36	.14	49.24	49.45	.43	6.28	6.43	2.40
JULY	632.46	619.67	−2.02	58.79	55.58	−5.46	8.94	6.74	−24.63
AUGUST	650.22	661.94	1.80	60.35	63.24	4.79	2.81	4.66	65.98
SEPTEMBER	666.10	667.83	.26	63.58	64.01	.67	2.44	2.71	10.89
OCTOBER	675.43	680.22	.71	63.82	64.98	1.82	1.40	2.12	51.31
NOVEMBER	702.65	691.44	−1.60	60.57	58.01	−4.23	4.03	2.37	−41.18
DECEMBER	712.52	715.55	.43	50.83	51.47	1.26	1.40	1.84	30.70
JANUARY '85	729.99	727.55	−.33	45.26	44.77	−1.07	2.45	2.11	−13.98
FEBRUARY	736.73	738.06	.18	42.30	42.56	.61	.92	1.11	19.78
MARCH	739.74	740.85	.15	39.79	40.00	.53	.41	.56	36.96
APRIL	736.18	742.27	.83	37.04	38.17	3.06	−.48	.34	−171.17
MAY	737.36	736.44	−.12	34.99	34.82	−.48	.16	.04	−78.10

MEAN ABSOLUTE % ERROR CPI = .63
MEAN ABSOLUTE % ERROR MIR = 4.39
MEAN ABSOLUTE % ERROR PCM = 64.04

Table 12
Two–Months–Ahead Simulation of the Monthly Inflation Forecasting Model
FORECAST (TWO MONTHS AHEAD)

MONTH	CPI LEVELS			MONTHLY INFLATION RATES (MIR)			MONTHLY % CHANGES (PCM)		
	ACTUAL	SIMULATED	% ERROR	ACTUAL	SIMULATED	% ERROR	ACTUAL	SIMULATED	% ERROR
JANUARY '83	377.00	385.65	2.30	6.80	9.25	36.03	.61	.99	61.68
FEBRUARY	378.90	383.49	1.21	6.60	7.87	19.31	.50	1.27	152.68
MARCH	379.80	386.79	1.84	6.30	8.28	31.48	.24	1.29	442.69
APRIL	381.70	387.08	1.41	6.20	7.67	23.72	.50	.83	65.51
MAY	384.40	386.86	.64	6.60	7.31	10.79	.71	.99	39.41
JUNE	389.00	390.03	.27	7.30	7.57	3.63	1.20	1.17	−2.07
JULY	398.30	397.30	−.25	7.90	7.64	−3.29	2.39	2.15	−10.17
AUGUST	405.50	404.57	−.23	9.10	8.87	−2.50	1.81	1.82	.51
SEPTEMBER	407.20	411.11	.96	9.10	10.13	11.31	.42	1.39	230.40
OCTOBER	412.30	425.56	3.22	10.30	13.82	34.14	1.25	3.51	180.47
NOVEMBER	437.60	447.79	2.33	16.80	19.57	16.50	6.14	6.18	.67
DECEMBER	472.40	467.01	−1.14	26.10	24.64	−5.61	7.95	6.48	−18.52
JANUARY '84	502.54	493.97	−1.71	33.30	31.03	−6.83	6.38	5.99	−6.09
FEBRUARY	517.73	517.81	.02	36.64	36.66	.06	3.02	3.53	16.75
MARCH	529.18	529.01	−.03	39.33	39.29	−.11	2.21	1.71	−22.78
APRIL	537.20	533.66	−.66	40.74	39.81	−2.28	1.52	1.33	−12.48
MAY	546.23	544.84	−.25	42.10	41.74	−.86	1.68	1.63	−3.01
JUNE	580.54	581.05	.09	49.24	49.37	.27	6.28	6.44	2.49
JULY	632.46	620.48	−1.89	58.79	55.78	−5.12	8.94	6.73	−24.78
AUGUST	650.22	649.48	−.11	60.35	60.17	−.30	2.81	4.81	71.28
SEPTEMBER	666.10	679.25	1.97	63.58	66.81	5.08	2.44	2.62	7.08
OCTOBER	675.43	681.90	.96	63.82	65.39	2.46	1.40	2.11	50.44
NOVEMBER	702.65	696.11	−.93	60.57	59.07	−2.47	4.03	2.34	−42.04
DECEMBER	712.52	704.63	−1.11	50.83	49.16	−3.29	1.40	1.91	35.77
JANUARY '85	729.99	730.50	.07	45.26	45.36	.22	2.45	2.09	−14.78
FEBRUARY	736.73	735.68	−.14	42.30	42.10	−.48	.92	1.12	21.11
MARCH	739.74	742.15	.33	39.79	40.25	1.14	.41	.55	35.59
APRIL	736.18	743.36	.98	37.04	38.38	3.61	−.48	.34	−170.27
MAY	737.36	742.38	.68	34.99	35.91	2.63	.16	.01	−91.35

MEAN ABSOLUTE % ERROR CPI = .96
MEAN ABSOLUTE % ERROR MIR = 8.12
MEAN ABSOLUTE % ERROR PCM = 63.20

Table 13
Three–Months–Ahead Simulation of the Monthly Inflation Forecasting Model
FORECAST (THREE MONTHS AHEAD)

MONTH	CPI LEVELS			MONTHLY INFLATION RATES (MIR)			MONTHLY % CHANGES (PCM)		
	ACTUAL	SIMULATED	%ERROR	ACTUAL	SIMULATED	%ERROR	ACTUAL	SIMULATED	%ERROR
JANUARY '83	377.00	364.37	−3.35	6.80	3.22	−52.65	.61	4.02	555.22
FEBRUARY	378.90	388.20	2.45	6.60	9.20	39.37	.50	.66	31.01
MARCH	379.80	387.89	2.13	6.30	8.59	36.36	.24	1.15	382.05
APRIL	381.70	389.02	1.92	6.20	8.21	32.46	.50	.58	15.59
MAY	384.40	389.55	1.34	6.60	8.06	22.10	.71	.64	−9.58
JUNE	389.00	390.94	.50	7.30	7.82	7.06	1.20	1.05	−11.90
JULY	398.30	398.03	−.07	7.90	7.84	−.78	2.39	2.05	−14.21
AUGUST	405.50	404.54	−.24	9.10	8.86	−2.60	1.81	1.82	.77
SEPTEMBER	407.20	410.49	.81	9.10	9.96	9.48	.42	1.46	248.93
OCTOBER	412.30	425.56	3.21	10.30	13.82	34.13	1.25	3.51	180.50
NOVEMBER	437.60	450.37	2.92	16.80	20.26	20.58	6.14	5.83	−5.00
DECEMBER	472.40	473.21	.17	26.10	26.29	.73	7.95	5.68	−28.62
JANUARY '84	502.54	494.62	−1.58	33.30	31.20	−6.31	6.38	5.91	−7.34
FEBRUARY	517.73	513.64	−.79	36.64	35.56	−2.95	3.02	3.98	31.74
MARCH	529.18	527.45	−.33	39.33	38.88	−1.15	2.21	1.86	−15.84
APRIL	537.20	535.24	−.37	40.74	40.22	−1.27	1.52	1.18	−22.38
MAY	546.23	543.20	−.56	42.10	41.31	−1.88	1.68	1.79	6.31
JUNE	580.54	580.33	−.04	49.24	49.19	−.11	6.28	6.51	3.71
JULY	632.46	620.27	−1.93	58.79	55.73	−5.21	8.94	6.75	−24.54
AUGUST	650.22	650.02	−.03	60.35	60.30	−.08	2.81	4.76	69.56
SEPTEMBER	666.10	670.85	.71	63.58	64.75	1.84	2.44	3.29	34.74
OCTOBER	675.43	689.60	2.10	63.82	67.26	5.38	1.40	1.52	8.78
NOVEMBER	702.65	697.24	−.77	60.57	59.33	−2.04	4.03	2.25	−44.18
DECEMBER	712.52	707.77	−.67	50.83	49.82	−1.98	1.40	1.68	19.30
JANUARY '85	729.99	723.14	−.94	45.26	43.90	−3.01	2.45	2.63	7.15
FEBRUARY	736.73	737.67	.13	42.30	42.48	.43	.92	.98	6.34
MARCH	739.74	740.55	.11	39.79	39.94	.38	.41	.66	61.84
APRIL	736.18	744.23	1.09	37.04	38.54	4.05	−.48	.28	−158.29
MAY	737.24	743.11	.80	34.99	36.04	3.01	.14	−.03	−123.41

MEAN ABSOLUTE % ERROR CPI = 1.10
MEAN ABSOLUTE % ERROR MIR = 10.32
MEAN ABSOLUTE % ERROR PCM = 73.41

Table 14
Four–Months–Ahead Simulation of the Monthly Inflation Forecasting Model
FORECAST (FOUR MONTHS AHEAD)

MONTH	CPI LEVELS			MONTHLY INFLATION RATES (MIR)			MONTHLY % CHANGES (PCM)		
	ACTUAL	SIMULATED	% ERROR	ACTUAL	SIMULATED	% ERROR	ACTUAL	SIMULATED	% ERROR
JANUARY '83	377.00	373.77	−.86	6.80	5.88	−13.46	.61	1.65	169.12
FEBRUARY	378.90	376.71	−.58	6.60	5.97	−9.62	.50	3.39	571.96
MARCH	379.80	390.43	2.80	6.30	9.30	47.65	.24	.57	141.47
APRIL	381.70	389.62	2.07	6.20	8.38	35.12	.50	.45	−10.78
MAY	384.40	390.60	1.61	6.60	8.35	26.52	.71	.41	−42.59
JUNE	389.00	392.39	.87	7.30	8.22	12.55	1.20	.73	−39.08
JULY	398.30	398.52	.06	7.90	7.97	.90	2.39	1.94	−18.88
AUGUST	405.50	404.93	−.14	9.10	8.97	−1.43	1.81	1.73	−4.09
SEPTEMBER	407.20	410.47	.80	9.10	9.96	9.42	.42	1.47	249.91
OCTOBER	412.30	425.22	3.13	10.30	13.73	33.26	1.25	3.59	186.50
NOVEMBER	437.60	450.37	2.92	16.80	20.26	20.58	6.14	5.83	−4.99
DECEMBER	472.40	474.60	.47	26.10	26.66	2.15	7.95	5.38	−32.33
JANUARY '84	502.54	497.97	−.91	33.30	32.09	−3.64	6.38	5.23	−18.00
FEBRUARY	517.73	513.99	−.72	36.64	35.65	−2.69	3.02	3.92	29.56
MARCH	529.18	525.20	−.75	39.33	38.28	−2.66	2.21	2.25	1.76
APRIL	537.20	534.39	−.52	40.74	40.00	−1.81	1.52	1.32	−13.17
MAY	546.23	544.05	−.40	42.10	41.53	−1.35	1.68	1.65	−2.06
JUNE	580.54	579.44	−.19	49.24	48.96	−.57	6.28	6.67	6.24
JULY	632.46	619.88	−1.99	58.79	55.63	−5.37	8.94	6.81	−23.81
AUGUST	650.22	649.91	−.05	60.35	60.27	−.13	2.81	4.78	70.16
SEPTEMBER	666.10	671.14	.76	63.58	64.82	1.95	2.44	3.25	33.06
OCTOBER	675.43	685.06	1.43	63.82	66.16	3.66	1.40	2.12	51.26
NOVEMBER	702.65	701.40	−.18	60.57	60.28	−.47	4.03	1.71	−57.54
DECEMBER	712.52	708.39	−.58	50.83	49.95	−1.72	1.40	1.60	13.78
JANUARY '85	729.99	724.84	−.71	45.26	44.23	2.27	2.45	2.41	−1.66
FEBRUARY	736.73	733.70	−.41	42.30	41.71	−1.38	.92	1.46	58.14
MARCH	739.74	741.62	.25	39.79	40.15	.89	.41	.54	31.02
APRIL	736.18	743.37	.98	37.04	38.38	3.61	−.48	.38	−179.12
MAY	737.36	743.58	.84	34.99	36.13	3.26	.16	−.09	−154.76

MEAN ABSOLUTE % ERROR CPI = .96
MEAN ABSOLUTE % ERROR MIR = 8.62
MEAN ABSOLUTE % ERROR PCM = 76.44

Table 15
Five–Months–Ahead Simulation of the Monthly Inflation Forecasting Model
FORECAST (FIVE MONTHS AHEAD)

MONTH	CPI LEVELS			MONTHLY INFLATION RATES (MIR)			MONTHLY % CHANGES (PCM)		
	ACTUAL	SIMULATED	% ERROR	ACTUAL	SIMULATED	% ERROR	ACTUAL	SIMULATED	% ERROR
JANUARY '83	377.00	373.31	–.98	6.80	5.75	–15.37	.61	1.82	196.64
FEBRUARY	378.90	380.77	.49	6.60	7.11	7.70	.50	1.87	271.50
MARCH	379.80	385.46	1.49	6.30	7.91	25.58	.24	2.32	878.32
APRIL	381.70	390.71	2.36	6.20	8.68	40.05	.50	.07	–85.22
MAY	384.40	390.86	1.68	6.60	8.42	27.60	.71	.32	–54.90
JUNE	389.00	392.85	.99	7.30	8.34	14.27	1.20	.57	–52.01
JULY	398.30	399.15	.21	7.90	8.14	3.05	2.39	1.72	–27.98
AUGUST	405.50	405.14	–.09	9.10	9.03	–.81	1.81	1.66	–8.08
SEPTEMBER	407.20	410.64	.85	9.10	10.00	9.92	.42	1.41	236.37
OCTOBER	412.30	425.21	3.13	10.30	13.72	33.23	1.25	3.59	186.72
NOVEMBER	437.60	450.22	2.88	16.80	20.22	20.35	6.14	5.88	–4.18
DECEMBER	472.40	474.60	.47	26.10	26.66	2.15	7.95	5.38	–32.33
JANUARY '84	502.54	498.57	–.79	33.30	32.25	–3.16	6.38	5.05	–20.85
FEBRUARY	517.73	515.44	–.44	36.64	36.04	–1.65	3.02	3.51	16.05
MARCH	529.18	525.35	–.72	39.33	38.32	–2.56	2.21	2.21	–.07
APRIL	537.20	533.42	–.70	40.74	39.75	–2.43	1.52	1.57	3.29
MAY	546.23	543.68	–.47	42.10	41.44	–1.58	1.68	1.74	3.43
JUNE	580.54	579.81	–.13	49.24	49.05	–.38	6.28	6.57	4.66
JULY	632.46	619.49	–2.05	58.79	55.53	–5.54	8.94	6.91	–22.72
AUGUST	650.22	649.74	–.07	60.35	60.23	–.20	2.81	4.82	71.54
SEPTEMBER	666.10	671.09	.75	63.58	64.81	1.93	2.44	3.26	33.49
OCTOBER	675.43	685.19	1.44	63.82	66.19	3.71	1.40	2.09	49.43
NOVEMBER	702.65	699.44	–.46	60.57	59.84	–1.21	4.03	2.10	–47.93
DECEMBER	712.52	710.18	–.33	50.83	50.33	–.97	1.40	1.25	–10.85
JANUARY '85	729.99	725.10	–.67	45.26	44.29	–2.15	2.45	2.36	–3.75
FEBRUARY	736.73	734.43	–.31	42.30	41.86	–1.05	.92	1.32	43.37
MARCH	739.74	739.90	.02	39.79	39.82	.08	.41	.85	107.03
APRIL	736.18	743.83	1.04	37.04	38.46	3.85	–.48	.30	–161.90
MAY	737.36	743.21	.79	34.99	36.06	3.06	.16	–.02	113.55

MEAN ABSOLUTE % ERROR CPI = .92
MEAN ABSOLUTE % ERROR MIR = 8.12
MEAN ABSOLUTE % ERROR PCM = 94.76

Table 16
Six–Months–Ahead Simulation of the Monthly Inflation Forecasting Model
FORECAST (SIX MONTHS AHEAD)

MONTH	CPI LEVELS			MONTHLY INFLATION RATES (MIR)			MONTHLY % CHANGES (PCM)		
	ACTUAL	SIMULATED	% ERROR	ACTUAL	SIMULATED	% ERROR	ACTUAL	SIMULATED	% ERROR
JANUARY '83	377.00	373.20	–1.01	6.80	5.72	–15.86	.61	1.90	209.42
FEBRUARY	378.90	380.63	.46	6.60	7.07	7.12	.50	1.96	289.07
MARCH	379.80	386.67	1.81	6.30	8.25	30.94	.24	1.55	551.87
APRIL	381.70	389.24	1.98	6.20	8.27	33.43	.50	.98	96.10
MAY	384.40	391.19	1.77	6.60	8.51	28.97	.71	.12	–82.96
JUNE	389.00	392.92	1.01	7.30	8.36	14.56	1.20	.53	–55.90
JULY	398.30	399.28	.25	7.90	8.18	3.51	2.39	1.64	–31.47
AUGUST	405.50	405.33	–.04	9.10	9.08	–.26	1.81	1.55	–14.34
SEPTEMBER	407.20	410.70	.86	9.10	10.02	10.11	.42	1.37	227.42
OCTOBER	412.30	425.26	3.14	10.30	13.74	33.37	1.25	3.56	184.27
NOVEMBER	437.60	450.22	2.88	16.80	20.22	20.35	6.14	5.88	–4.16
DECEMBER	472.40	474.56	.46	26.10	26.65	2.11	7.95	5.41	–32.02
JANUARY '84	502.54	498.57	–.79	33.30	32.25	–3.16	6.38	5.05	–20.85
FEBRUARY	517.73	515.61	–.41	36.64	36.08	–1.52	3.02	3.42	13.11
MARCH	529.18	525.78	–.64	39.33	38.44	–2.27	2.21	2.01	–9.28
APRIL	537.20	533.46	–.70	40.74	39.76	–2.41	1.52	1.54	1.92
MAY	546.23	543.39	–.52	42.10	41.36	–1.75	1.68	1.87	11.25
JUNE	580.54	579.70	–.14	49.24	49.02	–.44	6.28	6.63	5.48
JULY	632.46	619.60	–2.03	58.79	55.56	–5.49	8.94	6.86	–23.27
AUGUST	650.22	649.62	–.09	60.35	60.20	–.24	2.81	4.86	73.20
SEPTEMBER	666.10	671.04	.74	63.58	64.79	1.91	2.44	3.28	34.27
OCTOBER	675.43	685.18	1.44	63.82	66.18	3.70	1.40	2.10	49.80
NOVEMBER	702.65	699.48	–.45	60.57	59.84	–1.20	4.03	2.08	–48.26
DECEMBER	712.52	709.60	–.41	50.83	50.21	–1.22	1.40	1.45	3.42
JANUARY '85	729.99	725.64	–.60	45.26	44.39	–1.91	2.45	2.18	–11.25
FEBRUARY	736.73	734.51	–.30	42.30	41.87	–1.01	.92	1.30	40.53
MARCH	739.74	740.12	.05	39.79	39.86	.18	.41	.77	89.63
APRIL	736.18	743.32	.97	37.04	38.37	3.59	–.48	.46	–195.97
MAY	737.36	743.34	.81	34.99	36.09	3.13	.16	–.07	–140.93

MEAN ABSOLUTE % ERROR CPI = .92
MEAN ABSOLUTE % ERROR MIR = 8.13
MEAN ABSOLUTE % ERROR PCM = 87.98

The monthly inflation rates for the first five months of 1985 are tracked closely although the turning point for CPI in April is not reflected in the simulation.

As an aggregate measure of the overall predictive performance of the equation over the simulation period, we can use the mean absolute percentage errors (MAPE) for CPI and the inflation rate. These are taken from Tables 11--16 and summarized in Table 17.

Table 17
Mean Absolute Percent Errors in Multi–Period–Ahead Forecasts of CPI and the Inflation Rate

MEAN ABSOLUTE PERCENT ERRORS
(1983.01 – 1985.05)

MONTHS AHEAD	CPI	MONTHLY INFLATION RATES	MONTHLY PERCENT CHANGES
1	.63	4.39	64.04
2	.96	8.12	63.20
3	1.10	10.32	73.41
4	.96	8.62	76.44
5	.92	8.12	94.76
6	.92	8.13	87.98

The higher error statistics for inflation (compared to CPI) stem partly from the fact that the order of magnitude of the former is smaller than the latter. Due to the short-term nature of our model, we would expect some deterioration to show up in the error statistics as the forecasting horizon expands. However, it appears from Table 17 and Tables 11–16 that such deterioration does not set in as rapidly as we would suspect initially and that the equation would perform reasonably well in forecasting up to six months.

5. EXOGENOUS ASSUMPTIONS FOR JUNE-DECEMBER, 1985

As of this writing actual values of CPI for the entire Philippines are available up to (and including) May 1985. Consequently, throughout this section and the next, our forecasting exercise over 1985 starts with the month of June. For this exercise, we need to specify our assumptions concerning the exogenous factors in the price equation.

5.1 *Petroleum Product Prices (PMOILDP)*

There were numerous increases in posted petroleum product prices in 1983 and 1984. Except for one, these increases were all direct consequences of the devaluation episodes that struck the peso during this period. In the first quarter of 1985, as the world market for crude oil continued to soften and our official exchange rate improved, petroleum product prices were rolled back -- leading to substantial declines in PMOILDP.

These changes in PMOILDP are summarized in Table 18 together with the corresponding (antecedent) exchange rate adjustments. PMOILDP went up by 11 percent on July 1, 1983 as a consequence of the official devaluation to P11/$1 in June; and then by 31 percent on November 3, 1983 -- largely due to the 27 percent devaluation to P14/$1 in October. In 1984, a 7.5 percent upward adjustment in PMOILDP was instituted on May 18, as oil products were included in the coverage of the additional three percent ad valorem import duty imposed earlier in March. On June 6, 1984, when the peso was floated to a rate of P18/$1, PMOILDP went up further by 24.5 percent. Another upward adjustment (a 14 percent increase) occurred in October 1984 representing the net effect of various changes instituted at the time, including the continued deterioration of the exchange rate. The important changes were:

1. the creation of an Oil Price Stabilization Fund (through a levy of 10 centavos per liter) to cover oil-company losses due to future peso depreciation and/or higher world oil prices,
2. a new ad valorem domestic tax on oil products, averaging 99 centavos per liter,
3. the abolition of the Oil Industry Special Fund,
4. the reduction of the import duty on crude oil from 30 percent to 25 percent ad valorem.
5. a more than 50 percent reduction of specific taxes on petroleum products leading to an average decline from 70.2 centavos to 34.5 centavos per liter.

For 1985, with lower import costs of crude oil and improved peso-dollar rate, PMOILDP enjoyed a downward adjustment for the first time in years -- once in January and once again in March. The oil company take component of PMOILDP and the ad valorem tax on oil products were reduced in January and collection for the Oil Price Stabilization Fund was suspended temporarily. Another reduction in PMOILDP took place in March as the bi-monthly review of petroleum product prices by the Board of Energy resulted in cuts in oil company recovery costs as well as in the domestic ad valorem tax, with a consequent roll back of premium gasoline and diesel fuel prices by 61 centavos per liter. In the most recent

Table 18
Adjustments in Petroleum Prices and the Exchange Rate: July 1983–March 1985

Dates	Exchange Rate (P / $) Values	% Change	PMOILDP Values (centavos/liter)	% Change
Earlier	11		290.2	
July 1, 1983	11		322.1	11%
October 5, 1983	14	27.3%		
November 3, 1983			422.1	31%
May 18, 1984	14	0	453.8	7.5%
June 7, 1984	18	28.6%	584.7	28.8%
October, 1984	19.15	6.4%		
October 20, 1984			666.5	14.0%
January, 1985	18.98	–0.9%		
January 9, 1985			644.5	–3.3%
March, 1985	18.48	–2.6%		
March 6, 1985			592.2	–8.1%

Board of Energy review (May 1985), a further reduction in the oil company take was ordered but this reduction was transferred to the Stabilization Fund and there were no net changes in PMOILDP for May. The changes in the composition of PMOILDP since June 1983 are summarized in Table 19.

Beyond May 1985, the values assumed for PMOILDP are dovetailed with our assumptions for the official exchange rate. Since PMOILDP also includes tax and special fund components, we would not expect a complete pass-through of any exchange-rate fluctuation to PMOILDP. Currently, the approximate shares of the components in PMOILDP are (see Table 19):

Table 19
Composition (in Centavos per liter)
of the Average Wholesale Posted
Price of Petroleum Products (PMOILDP)

	Date of Effectivity							
	June 30 1983	Nov.3 1983	May 18 1984	June 6 1984	Oct. 20 1984	Jan. 9 1985	Mar. 7 1985	May 9 1985
Direct Oil Company Take	279.5[a]	370.1[b]	486[a]	493.8[a]	420.5	410.5	367.1	363.3
Customs Duty					102.5	102.5	102.5	102.5
Special Fund	10.0	12.0	12.0	14.3	–	–	–	–
OPSF	–	–	–	–	10.0	–	–	4.5
Specific Tax	32.6	40.0	67.0	76.6	34.5	34.5	34.5	34.5
Ad Valorem	–	–	–	–	99.0	97.0	88.1	87.4
TOTAL	322.1	422.1	565.0	584.0	666.5	644.5	592.2	592.2

a/ Includes custom duty.
b/ Includes custom duty and the increase in the hauling charge by 1.4 centavos.

Sources: Board of Energy
Business Day

Oil Company Take	63.09%
Customs Duty	15.38%
Specific Tax (ST)	5.18%
Ad Valorem (Domestic) Tax	14.85%
Oil Price Stabilization Fund	1.50%

Exchange rate changes would directly impact on the oil company take, customs duty, and the ad valorem tax. These components account for a combined total of 93.32 percent of PMOILDP. We assume this much of a direct pass-through to PMOILDP as the peso undergoes further re-alignment. In addition, we also incorporate any possible changes in the specific tax and stabilization fund components of PMOILDP. Thus, our formula for calculating PMOILDP over the forecast period is

$$\dot{PMOILDP} = .9332\ \dot{ER} + \dot{ST} + \dot{OPSF}$$

or

$$PMOILDP(t+1) = PMOILDP(t)*(1+.9332*(ER(t+1)-ER(t))/ER(t) + \Delta ST + \Delta OPSF \quad (8)$$

where ΔST and $\Delta OPSF$ denote the changes at time $t + 1$ in the specific tax and stabilization fund components of PMOILDP.

5.2. *Import and Export Price Indices*

Assumed changes in the official exchange rate also trigger changes in the peso-denominated import price index for non-fuel items (PMI):

$$PMI = PMQUSNF*(ER/6.671)*(1+TARIFF/1.45). \quad (9)$$

As noted in Section 2, the variable TARIFF consists of two components: the basic rate, which we measure as the unweighted mean (across items) of basic import duties and additional ad valorem duties.

The basic rate has been programmed to decline from a 45 percent levels in 1972 as shown in Table 20. The additional ad valorem import duties, on the other hand, first showed up on December 1982 have since been changed five times, as indicated in Table 21.

Table 20
Basic Rate for Import Duties

1972 – 1979	45%
1980	43%
1981	35%
1982	31%
1983	30%
1984	29%
1985	29%

Table 21
Additional Ad Valorem Duties on Imports (1982–1985)

December 21, 1982	3%
November 3, 1983	5%
March 29, 1984	8%
June 6, 1984	10%
October 15, 1984	5% for fuels
	10% for non–fuels
January 1, 1985	5%

Thus, our variable TARIFF initially followed a declining path from 1972 to November 1982, and then turned around on a growth pattern since the introduction of the additional ad valorem import duty on top of the basic rate.

For our forecast period, we assume that tariff rates and additional ad valorem duties on imports do not change from their April 1985 values For PMQUSNF in (9), the quarterly dollar-denominated import price index for non-fuels, the latest data from the National Census and Statistics Office

(NCSO) is the value of 229.6 for the first quarter of 1985. Starting from this given value and assuming that the dollar cost of non-fuel imports will increase in equal increments over the next three quarters with an implied annual growth rate of 3 percent, we obtain the following assumed values for PMQUSNF for the second, third, and fourth quarters of 1985, respectively: 241.2, 252.8, and 264.4.

For exports, we also assume a 3 percent annual growth rate in 1985 for the dollar denominated export price index (PXQUS). As in the case of imports, the latest figure available for the dollar denominated index is the value of 200.6 for the first quarter of 1985. From this, following the same calculations described above for imports, we get 224.9, 249.2, and 273.5 as the assumed values for PXQUS for the latest three quarters of 1985.

5.3. *Total Liquidity and Real Output*

For the monetary explanatory variable (TOTTGQ3), we need values for total domestic liquidity and real output.

Although official figures are not yet available, preliminary findings show that real output in the first quarter this year has fallen by around six percent (relative to output levels a year ago). Another indicator for the weak performance in the first quarter comes from the monthly surveys of key manufacturing establishments. These report a 6.6 percent month-to-month decline in manufacturing production in January this year and an average production index for the first quarter of 1985 which is 8 percent lower than in the last quarter of 1984.

In the second quarter this year, domestic interest rates have remained high and loan negotiations dragged on. We do not expect a recovery in output for the second quarter — except for seasonalities in production — and we, therefore, assume a similar six percent decline for this period in comparison with year-ago values. Based on these assumptions, our estimates for real GNP are 21.9 and 23.0 billion (1972) pesos for the first and second quarters for this year. Assuming a 2 percent decline in total real output for 1985, we get an estimated value of 46.6 billion pesos for real GNP in the second half of 1985, which when disaggregated by quarter according to the previous year's pattern, produces values of 22.1 and 24.5 billion pesos for the third and fourth quarters of 1985.

For total liquidity, tighter monetary policy in the beginning of 1984 led to a decline in domestic liquidity from ₱113.038 billion in December, 1983 to ₱112.207 billion in January. Efforts to curb money supply, however, were short-lived. Austerity measures to control growth in domestic liquidity apparently slackened: liquidity bounced back to ₱112.560 billion in February and ₱116.272 billion in March. There was a tendency for liquidity to expand further in April as the May-elections neared and the national government incurred borrowings of some ₱4.9 billion. How-

ever, in its attempts to meet IMF's precondition for a reduction in liquidity the Central Bank apparently managed to siphon off some excess liquidity from the monetary system: the official figures for total liquidity are ₱116.248 billion in April, ₱114.928 billion in May, and ₱112.145 billion in June. Again, in July, there were some pressures for expansion in liquidity as the Central Bank had to engage itself in major bank rescue operations. However, monetary authorities managed to keep this expansion under control so that, by the end of July, liquidity even went down to ₱111.303 billion. With the introduction of the JOBO bills, the contraction in liquidity continued, reaching the lowest point in October. After October 1984, as the Central Bank stepped up purchases of foreign exchange and as high-yield treasury bills began to mature, total liquidity proceeded to rise again from ₱108.2 billion in October 1984 to ₱110.9 billion, ₱120.4 billion, ₱122.3 billion, and ₱122.9 billion from November 1984 to February 1985, respectively.

The latest available figure is ₱119.4 billion for March 1985. For April and May, we assume liquidity levels of ₱120 and ₱122 billion, respectively. For succeeding months, we assume liquidity to grow in equal increments to an end-of-year level which is 13 percent higher than in the previous year-thus matching the target growth rate set forth for total liquidity in the Philippine government's "Economic Memorandum" to the IMF.

5.4. *Other Exogenous Variables*

Regarding the food price control variable, PCFOOD3L, all other items covered in this variable, except rice, were delisted in October-November 1984 (see Table 22). Currently, authorities are seriously considering the delisting of rice, perhaps by October this year. This variable is included in the model because of its role in capping inflationary pressures in 1983 and 1984. The percentage increases in the price ceilings during this period, prior to delisting, are detailed in Table 23. For the first part of our forecasting period (from June to September), we assume a constant value for PCFOOD3L equal to its level in November 1984. This is equivalent to assuming that PCFOOD3L has no additional impact on CPI during this part of the forecast period other than that measured in 1984. For October and beyond, to account for inflationary effects of the delisting of rice from price control, we introduce a ten percent increase on the prevailing price ceiling for rice.

Nominal interest rates on treasury bills were raised in 1984 to a peak of 43 percent in November. Since October 15, 1984, a 15 percent tax on treasury bill yields was imposed. The effective yield on 91-day treasury bills rose from 15.6 percent in January 1984 to 26.6 percent in June and a high of 38.8 percent in October 1984. Since then, the effective yield has gone down to 28.9 percent in April 1985. For our forecasts, we assume

Table 22
Price Ceilings for Food Items
Under Price Control
(Pesos per Unit)

DATE OF EFFECTIVITY	RICE	CORN GRITS	PORK CUTS	CHICKEN	EGGS	CANNED FISH	CANNED LIQUID MILK	SUGAR
2/14/80	₱		13.36	14.00	.62	2.25	2.48	2.66
6/13/80			13.36	14.00	.62	2.25	2.81	2.85
8/21/80	2.60	1.90	14.01	15.1	.62	2.25	2.81	2.85
3/1/81	2.60	1.90	14.61	16.17	.67	2.25	3.11	2.85
6/20/81	2.85	2.15	14.61	16.17	.67	2.25	3.11	2.85
3/15/82	2.85	2.15	14.61	16.17	.67	2.25	3.41	2.85
6/17/82	3.10	2.15	14.61	16.17	.67	2.25	3.41	2.85
6/1/83	3.10	2.15	14.61	16.17	.67	2.25	3.71	2.85
8/8/83	3.10	2.15	15.71	16.82	.72	2.32	3.71	2.85
9/12/83	3.10	2.15	15.71	16.82	.72	2.32	3.99	2.85
10/1/83	3.30	2.30	15.71	16.82	.72	2.32	3.99	4.44
11/12/83	3.30	2.30	17.85	18.10	.88	2.50	4.61	4.44
12/1/83	3.80	2.70	17.85	18.10	.94	2.75	5.07	4.55
12/12/83	3.80	2.70	17.85	18.10	.95	2.75	5.07	4.55
2/23/84	3.80	2.70	22.95	18.10	.95	2.75	5.07	4.55
3/1/84	3.80	2.70	22.95	18.10	.95	2.75	5.07	4.55
4/7/84	3.80	2.70	22.95	18.10	1.16	3.90	5.81	4.55
5/26/84	4.25	3.25	26.41	24.90	1.21	3.95	6.16	4.55
6/9/84	4.85	3.85	30.63	27.50	1.37	4.40	7.02	4.55
6/12/84	4.85	3.85	30.63	27.50	1.37	4.40	7.02	5.65
6/30/84	4.85	3.85	30.63	27.50	1.37	4.40	7.02	6.92
7/7/84	4.85	3.85	30.63	31.25	1.37	4.40	7.02	6.92
10/12/84	4.85	D	D	D	D	4.40	7.02	6.92
10/20/84	5.35	D	D	D	D	5.20	8.68	6.92
11/22/84	5.35	D	D	D	D	D	D	D
1/22/85	6.00	D	D	D	D	D	D	D

NOTES: The symbol "D" means delisted. Tabulated figures are averages for:

CHICKEN:	Live & Dressed Chicken
EGGS:	X-Large, Large, Medium, Small & Assorted Eggs
CANNED FISH:	Local & Imported Canned Fish
CANNED LIQUID MILK:	Evaporated & Condensed (Filled & Reconstituted) Milk
SUGAR:	Refined & Brown Sugar

Table 23
Percentage Increases (Relative to February 1980) in the Price Ceilings on Food Items Under Price Control

	Rice	Corn Grits	Pork Cuts	Chicken	Eggs	Canned Fish	Canned Liquid Milk	Sugar
August 21, 1980	0	0	5.1	7.7	0	0	13.7	6.7
March 1, 1981	0	0	9.4	15.4	8.1	0	25.8	9.0
June 20, 1981	9.6	13.2	9.4	15.4	8.1	0	25.8	9.0
March 15, 1982	9.6	13.2	9.4	15.4	8.1	0	37.8	31.1
June 17, 1982	19.2	13.2	9.4	15.4	8.1	0	37.8	31.1
June 1, 1983	19.2	13.2	9.4	15.4	8.1	0	49.9	31.1
August 8, 1983	19.2	13.2	11.3	20.4	16.3	.038	49.9	31.1
September 12, 1983	19.2	13.2	11.3	20.4	16.3	.038	60.8	31.1
October 1, 1983	26.9	21.1	11.3	20.4	16.3	.038	60.8	72.8
November 12, 1983	26.9	21.1	35.1	59.9	41.5	12.5	60.8	76.7
December 1, 1983	46.2	42.1	35.1	70.0	48.0	23.8	104.8	76.7
December 12, 1983	46.2	42.1	35.1	70.0	53.1	23.8	104.8	76.7
February 23, 1984	46.2	42.1	75.8	70.0	53.1	23.8	104.8	76.7
April 7, 1984	46.2	42.1	75.8	70.0	90.1	75.5	134.9	76.7
May 26, 1984	63.5	71.1	102.4	75.0	94.9	77.6	151.2	76.7
June 9, 1984	86.5	102.6	134.7	93.3	119.9	98.0	184.0	76.7
June 12, 1984	86.5	102.6	134.7	93.3	119.9	98.0	184.0	118.7
June 30, 1984	86.5	102.6	134.7	93.3	119.9	98.0	184.0	167.7
July 7, 1984	86.5	102.6	134.7	120.0	119.9	98.0	184.0	167.7
October 20, 1984	105.8	D	D	D	D	131.1	249.5	165.4
January 22, 1985	130.8	D	D	D	D	D	D	D

*D – delisted

that this yield will go down although the decline is not considerably greater than experienced. We assume that the effective rate will be 28 percent in May and June, 27 percent in the third quarter and 26 percent in the fourth quarter of 1985.

The two remaining explanatory variables are the legislated minimum wage (WLNANCR) and the dollar black market premium ERBMERP. The assumed values for these two variables for the rest of this year are ₱57 for WLNANCR (the effective minimum wage rate set since November, 1984) and 100 for ERBMERP (i.e., absence of any premium on the dollar in the black market).

6. INFLATION FORECASTS FOR JUNE–DECEMBER 1985

Our forecasting model then consists of the price equation coupled with linking equations for the calculation of the explanatory variables in the price equation. All these equations are summarized in Table 24. As we have indicated in the preceding section, we assume a 2 percent decline for real GNP in 1985. We also assume that the high yields on treasury bills will come down slowly to an effective rate of 26 percent by year end and this is accompanied by a slow upward adjustment in the peso-dollar exchange rate: ₱19/$1 in the third quarter and ₱20/$1 in the fourth quarter under Scenario A; and ₱20/$1 in the third and ₱22/$1 in the fourth quarter under Scenario B. We also assume that the year-end total liquidity in 1985 will be 13 percent higher than the end-of-year level in 1984, and that, in dollar terms, year-end import prices of non-fuels and export prices will be 3 percent higher in 1985 than in 1984. All the assumptions for these exogenous variables and others are summarized in Tables 25–27.

Under the optimistic scenario for the exchange rate — where the peso-dollar rate undergoes only a mild deterioration to ₱20/$1 towards the end of this year — our calculations show low, though positive, monthly percentage changes in CPI from June to December this year. The monthly inflation rates are projected to continue their downward trend — with estimated values of 27.1 percent in June, 17.2 percent in July, and 7.7 percent in December — with an implied annual inflation rate of 23.3 percent for 1985.

Assuming a higher depreciation of the peso in the second half of this year — say to ₱20/$1 in the third quarter and ₱22/$1 in the fourth quarter (Scenario A/B) — we get higher projected monthly percentage increases from July to December — leading to a monthly inflation rate of 11.9 percent in December and an annual inflation rate of 24.8 percent.

Scenario B/C is the most pessimistic in Table 28. GNP is assumed to decline by 3 percent in 1985 and this is accompanied by a more pronounced deterioration in our exchange rate. In this scenario, the monthly inflation rate for December is estimated to be still high, namely, 17 percent and the annual inflation rate for 1985 would be 27.1 percent.

Table 24
The Monthly Inflation Forecasting Model

I. EQUATIONS

1. PMOILDP = PMOILDP(−1) (1 + .88 * (ER − ER(−1)) /ER(−1)) + ΔST + ΔOPSF.
2. ERBMERP = 100 * MERBM/ER.
3. PM1 = PMQUSNF * (ER/6.671) * (1 + TARIFF/1.45).
4. PXPEXP = PXQUS*ER/6.671.
5. TLGNP = TL/GNPSEM.
6. TOTTGQ3 = $\frac{TLGNP + TLGNP(-1) + TLGNP(-2) + TLGNP(-3)}{8}$.
7. PCFOOD3L = $LOG(\frac{\sum_{i=1}^{8} w_i \ PF_i}{\sum_{i=1}^{8} w_i})$
8. CPI = −7.9569 + .9745 CPI(−1) − .2929 CPI(−2) + .04243 ERBMERP + .06344 PMOILDP + 7.2317 PMI + .02896 PXPEXP + 5.4133 TOTTGQ3 + .9248 DAY91 + .6086 WLNANCR + 18.886 DUM85

II. EXOGENOUS VARIABLES IN THE FORECASTING MODEL

ER = Official Exchange Rate; ₱/$1.
MERBM = Hongkong Banknote Rate; ₱/$1.
ΔST = Increase in the specific tax component of PMOILDP; centavos/liter.
ΔOPSF = Increase in the oil price stabilization fund component of PMOILDP; centavos/liter.
PMQUSNF = Quarterly import price index for non-fuels, dollar-denominated (in decimal; base year: 1972).
PXQUS = Quarterly export price index for all items, dollar-denominated (base year: 1972).
TARIFF = Simple average (across items) of basic tariffs on all imports plus additional ad valorem duties on imports; in decimal.
TL = Total domestic liquidity, in billion pesos.
GNPSEM = Semestral real GNP; in 1972 billion pesos.
PF_i = Percentage increase in the price ceiling for the ith food item under price control; in percent, relative to the price ceiling in February, 1980.
w_i = Weight, in the CPI basket, of the ith food item under price control; in decimal.
WLNANCR = Legislated minimum wage and cost-of-living allowance for the national capital region.
DAY91 = Effective yield of 91−day treasury bills.

TABLE 25
EXOGENOUS ASSUMPTIONS
COMMON TO ALL SCENARIOS

MONTH	PXQUS	PMQUSNF	WLNANCR	TARIF	91–DAY	PCFOOD3L	DUM85
JANUARY	200.6	2.296	57	1.34	29.937	4.8619	1.00
FEBRUARY	200.6	2.296	57	1.34	26.382	4.9024	1.00
MARCH	200.6	2.296	57	1.34	28.315	4.9024	1.00
APRIL	205.802	2.298	57	1.34	28.9	4.9024	1.00
MAY	205.802	2.298	57	1.34	28	4.9024	1.00
JUNE	205.802	2.298	57	1.34	28	4.9024	1.00
JULY	211.005	2.3	57	1.34	27	4.9024	1.00
AUGUST	211.005	2.3	57	1.34	27	4.9024	1.00
SEPTEMBER	211.005	2.3	57	1.34	27	4.9024	1.00
OCTOBER	216.207	2.302	57	1.34	26	4.9816	1.00
NOVEMBER	216.207	2.302	57	1.34	26	4.9816	1.00
DECEMBER	216.207	2.302	57	1.34	26	4.9816	1.00

TABLE 26
EXOGENOUS ASSUMPTIONS
SCENARIO A/A

MONTH	PMOILDP	PMI	MERBM	MONER	ERBMERP	MONTHL	GNPSEM	TLGNP	TOTTGQ3	PXPEXP
JANUARY	650.18	6.037	17.78	18.9794	93.65	122.298	43.836	2.790	10.25215	570.7192
FEBRUARY	644.50	5.807	17.00	18.2557	93.12	122.907	43.836	2.804	10.67832	584.9572
MARCH	600.64	5.877	17.58	18.4778	95.14	119.363	43.836	2.723	10.96328	555.6358
APRIL	592.20	5.889	18.15	18.5	98.11	120	45.958	2.611	10.92771	570.7296
MAY	592.20	5.889	18.50	18.5	100.00	122	45.958	2.655	10.79241	570.7296
JUNE	592.20	5.889	18.50	18.5	100.00	124	45.958	2.698	10.68674	570.7296
JULY	607.14	6.054	19.00	19	100.00	126	44.268	2.846	10.81009	600.9736
AUGUST	607.14	6.054	19.00	19	100.00	128	44.268	2.891	11.09049	600.9736
SEPTEMBER	607.14	6.054	19.00	19	100.00	130	44.268	2.937	11.37255	600.9736
OCTOBER	636.96	6.378	20.00	20	100.00	132	48.97	2.696	11.36997	648.1997
NOVEMBER	636.96	6.378	20.00	20	100.00	134	48.97	2.736	11.26003	648.1997
DECEMBER	636.96	6.378	20.00	20	100.00	136	48.97	2.777	11.14577	648.1997

TABLE 27
EXOGENOUS ASSUMPTIONS
SCENARIO A/B

MONTH	PMOILDP	PMI	MERBM	MONER	ERBMERP	MONTL	GNPSEM	TLGNP	TOTTGQ3	PXPEXP
JANUARY	650.18	6.037	17.78	18.9794	93.65	122.298	43.836	2.790	10.25215	570.7192
FEBRUARY	644.50	5.807	17.00	18.2557	93.12	122.907	43.836	2.804	10.67832	548.9572
MARCH	600.64	5.877	17.58	18.4778	95.14	119.363	43.836	2.723	10.96328	555.6358
APRIL	592.20	5.889	18.15	18.5	98.11	120	45.958	2.611	10.92771	570.7296
MAY	592.20	5.889	18.50	18.5	100.00	122	45.958	2.655	10.79241	570.7296
JUNE	592.20	5.889	18.50	18.5	100.00	124	45.958	2.698	10.68674	570.7296
JULY	637.01	6.372	20.00	20	100.00	126	44.268	2.846	10.81009	632.6038
AUGUST	637.01	6.372	20.00	20	100.00	128	44.268	2.891	11.09049	632.6038
SEPTEMBER	637.01	6.372	20.00	20	100.00	130	44.268	2.937	11.37255	632.6038
OCTOBER	696.45	7.016	22.00	22	100.00	132	48.97	2.696	11.36997	713.0196
NOVEMBER	696.45	7.016	22.00	22	100.00	134	48.97	2.736	11.26003	713.0196
DECEMBER	696.45	7.016	22.00	22	100.00	136	48.97	2.777	11.14577	713.0196

TABLE 28
EXOGENOUS ASSUMPTIONS
SCENARIO B/C

MONTH	PMOILDP	PMI	MERBM	MONER	ERBMERP	MONTL	GNPSEM	TLGNP	TOTTGQ3	PXPEXP
JANUARY	650.18	6.037	17.78	18.9794	93.65	122.298	43.836	2.790	10.25215	570.7192
FEBRUARY	644.50	5.807	17.00	18.2557	93.12	122.907	43.836	2.804	10.67832	548.9572
MARCH	600.64	5.877	17.58	18.4778	95.14	119.363	43.836	2.723	10.96328	555.6358
APRIL	592.20	5.889	18.15	18.5	98.11	120	45.958	2.611	10.92771	570.7296
MAY	592.20	5.889	18.50	18.5	100.00	122	45.958	2.655	10.79241	570.7296
JUNE	592.20	5.889	18.50	18.5	100.00	124	45.958	2.698	10.68674	570.7296
JULY	696.75	7.010	22.00	22	100.00	126	43.4	2.903	10.86702	695.8642
AUGUST	696.75	7.010	22.00	22	100.00	128	43.4	2.949	11.20525	695.8642
SEPTEMBER	696.75	7.010	22.00	22	100.00	130	43.4	2.995	11.54604	695.8642
OCTOBER	755.86	7.654	24.00	24	100.00	132	48	2.75	11.59793	777.8396
NOVEMBER	755.86	7.654	24.00	24	100.00	134	48	2.792	11.48637	777.8396
DECEMBER	755.86	7.654	24.00	24	100.00	136	48	2.833	11.37039	777.8396

Table 29
Inflation Forecasts for
June – December 1985

	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	1985
SCENARIO A/A								
GNPSEM	46.0	44.3	44.3	44.3	49.0	49.0	49.0	91.6
% Δ GNP	– 6%	2.2%	2.2%	–2.2%	2.2%	2.2%	2.2%	–2%
ER	18.5	19	19	19	20	20	20	19.0
CPI	738	741	745	750	759	764	767	745
MIR (%)	27.1	17.2	14.7	12.6	12.3	8.8	7.7	23.3
PCM (%)	.10	.42	.58	.65	1.09	.79	.37	–
SCENARIO A/B								
GNPSEM	46.0	44.3	44.3	44.3	49.0	49.0	49.0	91.6
% ΔGNP	– 6%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	–2%
ER	18.5	20	20	20	22	22	22	19.8
CPI	738	746	7756	764	779	791	797	754
MIR (%)	27.1	18.0	16.2	14.7	15.3	12.5	11.9	24.8
PCM (%)	.10	1.11	1.25	1.08	1.98	1.51	.81	–
SCENARIO B/C								
GNPSEM	46.0	43.4	43.4	43.4	48.0	48.0	48.0	90.6
% ΔGNP	– 6%	0	0	0	0	0	0	–3%
ER	18.5	22	22	22	24	24	24	20.8
CPI	738	757	777	792	812	826	833	768
MIR (%)	27.1	19.7	19.5	19.0	20.2	17.6	17.0	27.1
PCM (%)	.10	2.54	2.63	2.03	2.49	1.73	.88	–

MIR = Monthly Inflation Rate

PCM = Monthly Percent Change

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APPENDIX 1

DATA BASE FOR THE MONTHLY INFLATION FORECASTING MODEL JANUARY 1972--DECEMBER 1984

VARIABLE NAME	DESCRIPTION	UNITS	SOURCE
CPI	Monthly consumer price index for the Philippines	Base year: 1972	CB: 1972–1980 NCSO: 1981 onwards
DAY91	Interest rate on 91–day treasury bills	Percent	CB
DUM85	1 for 1985; 0 otherwise.	—	
ER	Average official exchange rate for the month.	₱/$	CB
ERBMERP	Blackmarket premium on the U.S. Dollar	—	100*MERBM/ER
GNPSEM	Semestral real GNP.	1972 Billion ₱	NAS–NEDA
MERBM	Hongkong peso–dollar banknote rate.	P/S	Pick's Currency Yearbook; Far Eastern Economic Review
PCFOOD3	Index of average increase of price ceilings of food items.		$\Sigma w_i \Delta P_i \ \Sigma w_i$ where: w_i = weight in the CPI basket of the ith food item under price control ΔP_i = percentage increase in the price ceiling for the ith food item under price control, relative to price ceiling in February, 1980.

VARIABLE NAME	DESCRIPTION	UNITS	SOURCE
PCFOOD3L	Natural logarithm of PCFOOD3.	–	Log (PCFOOD3)
PMI	Peso–denominated import price index for non–fuels.	Base year: 1972	PMQUSNF * ER((month)/ER(1972)) * (1 + TARIFF) / (1 + TARIFF (1972) where: ER(1972) = ₱6.671/$1 TARIFF (1972) = .45
PMOILDP	Average wholesale posted price of petroleum products.	centavos/liter	Board of Energy
PMQUSNF	Dollar–denominated import price index for non–fuels.	Base year: 1972	NCSO
PXPEXP	Peso–denominated export price index for all commodities.	Base year: 1972	PXQUS*ER (month/ER(1972))
PXQUS	Dollar–denominated export price index for all items.	Base year: 1972	NCSO
TARIFF	Simple average (across items) of tariffs on imports plus additional ad valorem duties on imports.	Percent	Tariff Commission
TL	Total domestic liquidity.	Billion ₱	CB
TLG	Total liquidity relative to semestral real GNP.	–	TL/GNPSEM
TOTTGQ3	Sum of current TLG and its lags for the first, second, and third period.	–	TLG + TLG (–1) + TLG (–2) + TLG (–3)
WLNANCR	Legislated minimum wage for the National Capital Region	₱/day	National Wages Council

File Name: MONBASE .DAT

CASE NO.	PERIOD	CPI	DAY91	DUM85	ER
1	1972.01	100.3000	11.6150	0.0000	6.4350
2	1972.02	100.1000	11.1250	0.0000	6.4350
3	1972.03	99.9000	11.0640	0.0000	6.4350
4	1972.04	98.9000	10.9740	0.0000	6.5749
5	1972.05	98.4000	11.6990	0.0000	6.7220
6	1972.06	98.6000	12.3630	0.0000	6.7718
7	1972.07	100.6000	12.7260	0.0000	6.7778
8	1972.08	103.6000	12.6580	0.0000	6.7795
9	1972.09	103.6000	12.6080	0.0000	6.7795
10	1972.10	100.1000	12.5930	0.0000	6.7812
11	1972.11	98.0000	12.0400	0.0000	6.7806
12	1972.12	97.4000	11.6620	0.0000	6.7804
13	1973.01	97.5000	11.3080	0.0000	6.7814
14	1973.02	98.0000	10.6110	0.0000	6.7762
15	1973.03	99.8000	9.9380	0.0000	6.7719
16	1973.04	102.0000	9.9960	0.0000	6.7662
17	1973.05	105.4000	10.1630	0.0000	6.7632
18	1973.06	108.0000	9.9690	0.0000	6.7592
19	1973.07	112.2000	10.0270	0.0000	6.7583
20	1973.08	119.5000	9.4320	0.0000	6.7467
21	1973.09	125.4000	7.8350	0.0000	6.7392
22	1973.10	122.9000	5.9250	0.0000	6.7396
23	1973.11	125.5000	8.1930	0.0000	6.7382
24	1973.12	130.0000	9.7350	0.0000	6.7353
25	1974.01	142.4000	10.0550	0.0000	6.7310
26	1974.02	144.3000	10.0340	0.0000	6.7189
27	1974.03	148.1000	9.9000	0.0000	6.7234
28	1974.04	149.9000	10.1200	0.0000	6.7216
29	1974.05	152.3000	10.3700	0.0000	6.7174
30	1974.06	157.0000	10.1220	0.0000	6.7184
31	1974.07	161.9000	10.0930	0.0000	6.7346
32	1974.08	164.6000	9.9590	0.0000	6.7428
33	1974.09	164.1000	10.1430	0.0000	6.7473
34	1974.10	163.4000	9.7580	0.0000	6.7724
35	1974.11	165.7000	9.9840	0.0000	7.0670
36	1974.12	167.9000	10.0270	0.0000	7.0623
37	1975.01	165.3000	10.3640	0.0000	7.0664
38	1975.02	164.8000	10.9730	0.0000	7.0522
39	1975.03	164.0000	10.9410	0.0000	7.0261
40	1975.04	164.7000	10.4610	0.0000	7.0177
41	1975.05	165.8000	10.1620	0.0000	7.0178
42	1975.06	165.4000	9.9460	0.0000	7.0150
43	1975.07	167.2000	10.0240	0.0000	7.2719
44	1975.08	167.9000	10.3170	0.0000	7.5018
45	1975.09	168.8000	10.2930	0.0000	7.5091
46	1975.10	169.0000	10.1760	0.0000	7.5001
47	1975.11	169.8000	10.2510	0.0000	7.4975
48	1975.12	170.3000	10.1950	0.0000	7.4992
49	1976.01	174.3000	10.4070	0.0000	7.4856
50	1976.02	175.9000	10.3790	0.0000	7.4693

CASE NO.	PERIOD	CPI	DAY91	DUM85	ER
51	1976.03	177.5000	10.1340	0.0000	7.4583
52	1976.04	178.4000	10.0120	0.0000	7.4354
53	1976.05	180.0000	10.1440	0.0000	7.4304
54	1976.06	181.7000	10.1260	0.0000	7.4309
55	1976.07	184.0000	10.0720	0.0000	7.4298
56	1976.08	185.1000	10.0320	0.0000	7.4297
57	1976.09	186.1000	9.9450	0.0000	7.4290
58	1976.10	186.6000	9.9000	0.0000	7.4283
59	1976.11	188.1000	10.4790	0.0000	7.4282
60	1976.12	189.6000	10.5710	0.0000	7.4282
61	1977.01	191.3000	10.8550	0.0000	7.4279
62	1977.02	192.5000	10.8030	0.0000	7.4272
63	1977.03	193.9000	10.7730	0.0000	7.4262
64	1977.04	195.0000	10.6130	0.0000	7.4109
65	1977.05	196.6000	10.6590	0.0000	7.4049
66	1977.06	199.0000	10.8890	0.0000	7.3981
67	1977.07	202.2000	10.7760	0.0000	7.3961
68	1977.08	204.7000	10.6810	0.0000	7.3940
69	1977.09	205.8000	10.8620	0.0000	7.3934
70	1977.10	206.4000	11.1230	0.0000	7.3892
71	1977.11	207.5000	11.3790	0.0000	7.3869
72	1977.12	209.3000	11.4000	0.0000	7.3791
73	1978.01	210.9000	11.4230	0.0000	7.3715
74	1978.02	211.0000	10.4720	0.0000	7.3715
75	1978.03	210.2000	11.0680	0.0000	7.3735
76	1978.04	210.5000	11.0200	0.0000	7.3668
77	1978.05	210.8000	10.7500	0.0000	7.3635
78	1978.06	212.1000	10.5870	0.0000	7.3632
79	1978.07	214.8000	10.5990	0.0000	7.3614
80	1978.08	216.4000	10.2020	0.0000	7.3617
81	1978.09	217.8000	10.3340	0.0000	7.3613
82	1978.10	219.5000	11.1520	0.0000	7.3589
83	1978.11	222.4000	11.3330	0.0000	7.3650
84	1978.12	223.5000	11.6230	0.0000	7.3712
85	1979.01	227.1000	12.2200	0.0000	7.3762
86	1979.02	228.7000	12.2030	0.0000	7.3767
87	1979.03	229.9000	12.0620	0.0000	7.3777
88	1979.04	240.2000	11.9770	0.0000	7.3796
89	1979.05	244.8000	12.2280	0.0000	7.3783
90	1979.06	249.2000	12.3580	0.0000	7.3739
91	1979.07	254.3000	12.4590	0.0000	7.3706
92	1979.08	260.0000	12.4070	0.0000	7.3717
93	1979.09	264.1000	12.3220	0.0000	7.3722
94	1979.10	267.3000	12.2210	0.0000	7.3709
95	1979.11	269.2000	12.2440	0.0000	7.3718
96	1979.12	271.5000	12.1620	0.0000	7.4110
97	1980.01	275.3000	12.1810	0.0000	7.4167
98	1980.02	278.7000	11.9530	0.0000	7.4179
99	1980.03	284.7000	11.9490	0.0000	7.4259
100	1980.04	286.8000	11.9440	0.0000	7.4434

CASE NO.	PERIOD	CPI	DAY91	DUM85	ER
101	1980.05	289.4000	11.9430	0.0000	7.5095
102	1980.06	292.2000	11.9610	0.0000	7.5209
103	1980.07	296.2000	12.1260	0.0000	7.5432
104	1980.08	299.8000	12.3420	0.0000	7.5562
105	1980.09	304.5000	12.2930	0.0000	7.5622
106	1980.10	306.8000	12.3030	0.0000	7.5669
107	1980.11	309.2000	12.3300	0.0000	7.5805
108	1980.12	312.2000	12.3090	0.0000	7.5942
109	1981.01	316.9000	12.2650	0.0000	7.6323
110	1981.02	319.3000	12.2660	0.0000	7.6676
111	1981.03	320.5000	12.3010	0.0000	7.7303
112	1981.04	323.1000	12.3700	0.0000	7.7904
113	1981.05	325.5000	12.4100	0.0000	7.8504
114	1981.06	328.5000	12.4490	0.0000	7.9360
115	1981.07	335.4000	13.0800	0.0000	7.9491
116	1981.08	337.2000	12.6960	0.0000	7.9516
117	1981.09	338.4000	12.5290	0.0000	7.9920
118	1981.10	340.3000	12.5520	0.0000	8.0641
119	1981.11	343.0000	12.8420	0.0000	8.1009
120	1981.12	345.6000	12.7970	0.0000	8.1312
121	1982.01	353.0000	13.0360	0.0000	8.2542
122	1982.02	355.5000	13.3780	0.0000	8.2830
123	1982.03	357.2000	13.5790	0.0000	8.3405
124	1982.04	359.5000	13.5910	0.0000	8.3792
125	1982.05	360.5000	13.9800	0.0000	8.4161
126	1982.06	362.6000	14.0140	0.0000	8.4502
127	1982.07	369.1000	14.1880	0.0000	8.4878
128	1982.08	371.6000	13.7650	0.0000	8.5293
129	1982.09	373.3000	13.9220	0.0000	8.6380
130	1982.10	373.9000	13.9350	0.0000	8.7664
131	1982.11	374.5000	14.0040	0.0000	8.8752
132	1982.12	374.7000	14.0270	0.0000	9.0594
133	1983.01	377.0000	14.0430	0.0000	9.2865
134	1983.02	378.9000	14.0470	0.0000	9.4644
135	1983.03	379.8000	14.0430	0.0000	9.6057
136	1983.04	381.7000	14.0340	0.0000	9.8693
137	1983.05	384.4000	13.9880	0.0000	10.0316
138	1983.06	389.0000	13.5610	0.0000	10.3553
139	1983.07	398.3000	13.7040	0.0000	11.0017
140	1983.08	405.5000	14.0610	0.0000	11.0016
141	1983.09	407.2000	14.2990	0.0000	11.0018
142	1983.10	412.3000	14.5770	0.0000	13.7016
143	1983.11	437.6000	15.0380	0.0000	14.0020
144	1983.12	472.4000	15.3820	0.0000	14.0020
145	1984.01	502.5400	15.6330	0.0000	14.0020
146	1984.02	517.7300	16.3200	0.0000	14.0020
147	1984.03	529.1800	16.5420	0.0000	14.0020
148	1984.04	537.2000	16.8630	0.0000	14.0020
149	1984.05	546.2300	19.7760	0.0000	14.0020
150	1984.06	580.5400	26.6280	0.0000	17.4020

CASENO.	PERIOD	CPI	DAY 91	DUM 85	ER
151	1984.07	632.4600	31.6250	0.0000	18.0020
152	1984.08	650.2200	33.5350	0.0000	18.0020
153	1984.09	666.1000	37.7750	0.0000	18.0020
154	1984.10	675.4300	38.7850	0.0000	19.1482
155	1984.11	702.6500	36.5500	0.0000	19.9590
156	1984.12	712.5200	35.8840	0.0000	19.8593
157	1985.01	729.9900	29.9370	1.0000	18.9794
158	1985.02	736.7300	26.3820	1.0000	18.2557
159	1985.03	739.7400	28.3150	1.0000	18.4778
MEAN		269.0959	13.0459	.0189	8.5625
STD. DEV.		150.2100	5.4792	.1365	3.0845

Name: MONBASE .DAT

CASE NO.	PERIOD	ERBMERP	GNPSEM	MERBM	PCFOOD3
1	1972.01	105.3613	27339.0000	6.7800	0.0000
2	1972.02	106.9153	27339.0000	6.8800	0.0000
3	1972.03	108.0031	27339.0000	6.9500	0.0000
4	1972.04	108.7469	27339.0000	7.1500	0.0000
5	1972.05	105.9209	27339.0000	7.1200	0.0000
6	1972.06	106.0279	27339.0000	7.1800	0.0000
7	1972.07	104.9013	28600.0000	7.1100	0.0000
8	1972.08	98.8273	28600.0000	6.7000	0.0000
9	1972.09	106.3500	28600.0000	7.2100	0.0000
10	1972.10	103.9639	28600.0000	7.0500	0.0000
11	1970.11	102.0559	28600.0000	6.9200	0.0000
12	1972.12	108.4007	28600.0000	7.3500	0.0000
13	1973.01	108.3847	29944.0000	7.3500	0.0000
14	1973.02	106.5494	29944.0000	7.2200	0.0000
15	1973.03	106.1740	29944.0000	7.1900	0.0000
16	1973.04	106.2635	29944.0000	7.1900	0.0000
17	1973.05	113.4079	29944.0000	7.6700	0.0000
18	1973.06	109.7773	29944.0000	7.4200	0.0000
19	1973.07	109.7763	31232.0000	7.3900	0.0000
20	1973.08	108.7939	31232.0000	7.3400	0.0000
21	1973.09	102.3860	31232.0000	6.9000	0.0000
22	1973.10	101.1930	31232.0000	6.8200	0.0000
23	1973.11	103.8853	31232.0000	7.0000	0.0000
24	1973.12	101.7030	31232.0000	6.8500	0.0000
25	1974.01	103.2536	31798.0000	6.9500	0.0000
26	1974.02	102.9930	31798.0000	6.9200	0.0000
27	1974.03	105.0064	31798.0000	7.0600	0.0000
28	1974.04	103.1005	31798.0000	6.9300	0.0000
29	1974.05	104.0581	31798.0000	6.9900	0.0000
30	1974.06	105.3822	31798.0000	7.0800	0.0000
31	1974.07	104.2378	32777.0000	7.0200	0.0000
32	1974.08	107.0772	32777.0000	7.2200	0.0000
33	1974.09	108.1914	32777.0000	7.3000	0.0000
34	1974.10	109.1194	32777.0000	7.3900	0.0000
35	1974.11	104.0045	32777.0000	7.3500	0.0000
36	1974.12	105.4897	32777.0000	7.4500	0.0000
37	1975.01	104.8624	33358.0000	7.4100	0.0000
38	1975.02	100.6778	33358.0000	7.1000	0.0000
39	1975.03	105.7486	33358.0000	7.4300	0.0000
40	1975.04	106.0176	33358.0000	7.4400	0.0000
41	1975.05	105.4462	33358.0000	7.4000	0.0000
42	1975.06	107.4840	33358.0000	7.5400	0.0000
43	1975.07	110.2875	35099.0000	8.0200	0.0000
44	1975.08	106.3745	35099.0000	7.9800	0.0000
45	1975.09	115.8594	35099.0000	8.7000	0.0000
46	1975.10	114.2651	35099.0000	8.5700	0.0000
47	1975.11	115.3718	35099.0000	8.6500	0.0000
48	1975.12	113.3454	35099.0000	8.5000	0.0000
49	1976.01	113.6849	36152.0000	8.5100	0.0000
50	1976.02	109.2472	36152.0000	8.1600	0.0000

CASE NO.	PERIOD	ERBMERP	GNPSEM	MERBM	PCFOOD3
51	1976.03	100.5591	36152.0000	7.5000	0.0000
52	1976.04	104.7691	36152.0000	7.7900	0.0000
53	1976.05	104.3012	36152.0000	7.7500	0.0000
54	1976.06	102.2756	36152.0000	7.6000	0.0000
55	1976.07	100.2719	37320.0000	7.4500	0.0000
56	1976.08	108.3489	37320.0000	8.0500	0.0000
57	1976.09	107.2823	37320.0000	7.9700	0.0000
58	1976.10	107.6963	37320.0000	8.0000	0.0000
59	1976.11	107.4285	37320.0000	7.9800	0.0000
60	1976.12	109.0439	37320.0000	8.1000	0.0000
61	1977.01	112.6833	38334.0000	8.3700	0.0000
62	1977.02	106.7697	38334.0000	7.9300	0.0000
63	1977.03	107.4574	38334.0000	7.9800	0.0000
64	1977.04	103.4962	38334.0000	7.6700	0.0000
65	1977.05	104.7955	38334.0000	7.7600	0.0000
66	1977.06	105.9732	38334.0000	7.8400	0.0000
67	1977.07	105.0554	39817.0000	7.7700	0.0000
68	1977.08	106.3024	39817.0000	7.8600	0.0000
69	1977.09	105.4995	39817.0000	7.8000	0.0000
70	1977.10	101.4995	39817.0000	7.5000	0.0000
71	1977.11	102.3433	39817.0000	7.5600	0.0000
72	1977.12	102.5870	39817.0000	7.5700	0.0000
73	1978.01	103.7781	40740.0000	7.6500	0.0000
74	1978.02	103.5068	40740.0000	7.6300	0.0000
75	1978.03	106.0555	40740.0000	7.8200	0.0000
76	1978.04	107.9166	40740.0000	7.9500	0.0000
77	1978.05	107.0143	40740.0000	7.8800	0.0000
78	1978.06	106.7471	40740.0000	7.8600	0.0000
79	1978.07	105.0072	41903.0000	7.7300	0.0000
80	1978.08	107.0405	41903.0000	7.8800	0.0000
81	1978.09	106.3671	41903.0000	7.8300	0.0000
82	1978.10	106.6736	41903.0000	7.8500	0.0000
83	1978.11	109.9796	41903.0000	8.1000	0.0000
84	1978.12	109.8871	41903.0000	8.1000	0.0000
85	1979.01	110.3549	43441.0000	8.1400	0.0000
86	1979.02	108.7207	43441.0000	8.0200	0.0000
87	1979.03	111.5524	43441.0000	8.2300	0.0000
88	1979.04	109.0845	43441.0000	8.0500	0.0000
89	1979.05	105.7154	43441.0000	7.8000	0.0000
90	1979.06	107.4059	43441.0000	7.9200	0.0000
91	1979.07	108.2680	44915.0000	7.9800	0.0000
92	1979.08	104.9961	44915.0000	7.7400	0.0000
93	1979.09	105.5316	44915.0000	7.7800	0.0000
94	1979.10	106.7712	44915.0000	7.8700	0.0000
95	1979.11	110.6921	44915.0000	8.1600	0.0000
96	1979.12	106.5983	44915.0000	7.9000	0.0000
97	1980.01	107.0557	45310.0000	7.9400	0.0000
98	1980.02	106.2295	45310.0000	7.8800	0.0000
99	1980.03	109.2123	45310.0000	8.1100	0.0000
100	1980.04	110.8364	45310.0000	8.2500	0.0000

CASE NO.	PERIOD	ERBMERP	GNPSEM	MERBM	PCFOOD3
101	1980.05	107.0644	45310.0000	8.0400	0.0000
102	1980.06	106.6362	45310.0000	8.0200	0.0000
103	1980.07	106.0558	47530.0000	8.0000	0.0000
104	1980.08	103.3588	47530.0000	7.8100	.8200
105	1980.09	102.4834	47530.0000	7.7500	2.3000
106	1980.10	103.7413	47530.0000	7.8500	2.3000
107	1980.11	105.1382	47530.0000	7.9700	2.3000
108	1980.12	104.6852	47530.0000	7.9500	2.3000
109	1981.01	104.2936	47963.0000	7.9600	2.3000
110	1981.02	104.5960	47963.0000	8.0200	2.3000
111	1981.03	102.5833	47963.0000	7.9300	4.5800
112	1981.04	102.3054	47963.0000	7.9700	4.5800
113	1981.05	102.6699	47963.0000	8.0600	4.5800
114	1981.06	101.9405	47963.0000	8.0900	6.9300
115	1981.07	104.1627	47759.0000	8.2800	10.9800
116	1981.08	105.5134	47759.0000	8.3900	10.9800
117	1981.09	105.1051	47759.0000	8.4000	10.9800
118	1981.10	102.9253	47759.0000	8.3000	10.9800
119	1981.11	102.9515	47759.0000	8.3400	10.9800
120	1981.12	103.7977	47759.0000	8.4400	10.9800
121	1982.01	101.7664	48773.0000	8.4000	10.9800
122	1982.02	103.4649	48773.0000	8.5700	10.9800
123	1982.03	99.2746	48773.0000	8.2800	12.1900
124	1982.04	98.4581	48773.0000	8.2500	13.2000
125	1982.05	98.5017	48773.0000	8.2900	13.2000
126	1982.06	102.0094	48773.0000	8.6200	15.3600
127	1982.07	100.3794	48766.0000	8.5200	17.8300
128	1982.08	103.7600	48766.0000	8.8500	17.8300
129	1982.09	104.1908	48766.0000	9.0000	17.8300
130	1982.10	106.0869	48766.0000	9.3000	17.8300
131	1982.11	104.7864	48766.0000	9.3000	17.8300
132	1982.12	101.3312	48766.0000	9.1800	17.8300
133	1983.01	100.1454	50650.0000	9.3000	17.8300
134	1983.02	102.7007	50650.0000	9.7200	17.8300
135	1983.03	107.4362	50650.0000	10.3200	17.8300
136	1983.04	104.5667	50650.0000	10.3200	17.8300
137	1983.05	102.6755	50650.0000	10.3000	17.8300
138	1983.06	106.9984	50650.0000	11.0800	18.4500
139	1983.07	100.8935	48169.0000	11.1000	18.4500
140	1983.08	109.5295	48169.0000	12.0500	19.2600
141	1983.09	116.7991	48169.0000	12.8500	19.8500
142	1983.10	111.0819	48169.0000	15.2200	27.8500
143	1983.11	134.4808	48169.0000	18.8300	32.5700
144	1983.12	134.9807	48169.0000	18.9000	51.2800
145	1984.01	148.4074	47891.0000	20.7800	51.3900
146	1984.02	126.2677	47891.0000	17.6800	52.4000
147	1984.03	109.4129	47891.0000	15.3200	55.6000
148	1984.04	127.6960	47891.0000	17.8800	59.5300
149	1984.05	136.9804	47891.0000	19.1800	63.7100
150	1984.06	119.4690	47891.0000	20.7900	96.4100

CASE NO.	PERIOD	ERBMERP	GNPSEM	MERBM	PCFOOD3
151	1984.07	109.2101	45493.0000	19.6600	108.8900
152	1984.08	108.2102	45493.0000	19.4800	109.2800
153	1984.09	107.6547	45493.0000	19.3800	109.2800
154	1984.10	99.8527	45493.0000	19.1200	111.9500
155	1984.11	96.6982	45493.0000	19.3000	126.7300
156	1984.12	98.3922	45493.0000	19.5400	126.7300
157	1985.01	93.6500	43836.0000	17.7800	129.2700
158	1985.02	93.1200	43836.0000	17.0000	134.6200
159	1985.03	95.1400	43836.0000	17.5800	134.6200
MEAN		106.7159	40490.2266	9.1714	12.7757
STD. DEV.		7.0124	7177.6504	3.5058	30.1919

Name: MONBASE .DAT

CASE NO.	PERIOD	PCFOOD3L	PM1	PMOILDP	PMQUSNF
1	1972.01	0.0000	.9646	26.4000	1.0000
2	1972.02	0.0000	.9646	26.4000	1.0000
3	1972.03	0.0000	.9646	26.4000	1.0000
4	1972.04	0.0000	.9856	26.4000	1.0000
5	1972.05	0.0000	1.0076	26.4000	1.0000
6	1972.06	0.0000	1.0151	26.4000	1.0000
7	1972.07	0.0000	1.0160	26.4000	1.0000
8	1972.08	0.0000	1.0163	26.4000	1.0000
9	1972.09	0.0000	1.0163	26.4000	1.0000
10	1972.10	0.0000	1.0165	26.4000	1.0000
11	1972.11	0.0000	1.0164	26.4000	1.0000
12	1972.12	0.0000	1.0164	26.4000	1.0000
13	1973.01	0.0000	1.2331	26.4000	1.2130
14	1973.02	0.0000	1.2321	26.4000	1.2130
15	1973.03	0.0000	1.2313	26.4000	1.2130
16	1973.04	0.0000	1.2699	26.4000	1.2520
17	1973.05	0.0000	1.2693	26.4000	1.2520
18	1973.06	0.0000	1.2686	26.4000	1.2520
19	1973.07	0.0000	1.3616	26.4000	1.3440
20	1973.08	0.0000	1.3593	26.4000	1.3440
21	1973.09	0.0000	1.3577	26.4000	1.3440
22	1973.10	0.0000	1.4609	29.0000	1.4460
23	1973.11	0.0000	1.4606	33.8000	1.4460
24	1973.12	0.0000	1.4599	40.5000	1.4460
25	1974.01	0.0000	1.6870	40.5000	1.6720
26	1974.02	0.0000	1.6840	52.2000	1.6720
27	1974.03	0.0000	1.6851	70.3000	1.6720
28	1974.04	0.0000	1.8237	75.2000	1.8100
29	1974.05	0.0000	1.8226	80.2000	1.8100
30	1974.06	0.0000	1.8229	80.2000	1.8100
31	1974.07	0.0000	1.9100	80.2000	1.8920
32	1974.08	0.0000	1.9124	80.2000	1.8920
33	1974.09	0.0000	1.9136	80.2000	1.8920
34	1974.10	0.0000	1.9106	80.2000	1.8820
35	1974.11	0.0000	1.9937	80.2000	1.8820
36	1974.12	0.0000	1.9924	80.2000	1.8820
37	1975.01	0.0000	1.9353	80.2000	1.8270
38	1975.02	0.0000	1.9314	80.2000	1.8270
39	1975.03	0.0000	1.9243	80.2000	1.8270
40	1975.04	0.0000	2.0271	80.2000	1.9270
41	1975.05	0.0000	2.0272	84.3000	1.9270
42	1975.06	0.0000	2.0264	88.2000	1.9270
43	1975.07	0.0000	1.9938	88.2000	1.8290
44	1975.08	0.0000	2.0568	88.2000	1.8290
45	1975.09	0.0000	2.0588	88.2000	1.8290
46	1975.10	0.0000	2.0878	88.2000	1.8570
47	1975.11	0.0000	2.0871	88.2000	1.8570
48	1975.12	0.0000	2.0875	88.2000	1.8570
49	1976.01	0.0000	2.0983	95.9000	1.8700
50	1976.02	0.0000	2.0938	103.2000	1.8700

CASE NO.	PERIOD	PCFOOD3L	PM1	PMOILDP	PMQUSNF
51	1976.03	0.0000	2.0907	103.2000	1.8700
52	1976.04	0.0000	2.0620	103.2000	1.8500
53	1976.05	0.0000	2.0606	103.2000	1.8500
54	1976.06	0.0000	2.0607	103.2000	1.8500
55	1976.07	0.0000	2.0571	103.2000	1.8470
56	1976.08	0.0000	2.0571	103.2000	1.8470
57	1976.09	0.0000	2.0569	103.2000	1.8470
58	1976.10	0.0000	2.0968	103.2000	1.8830
59	1976.11	0.0000	2.0967	103.2000	1.8830
60	1976.12	0.0000	2.0967	103.2000	1.8830
61	1977.01	0.0000	2.1056	103.2000	1.8910
62	1977.02	0.0000	2.1054	103.2000	1.8910
63	1977.03	0.0000	2.1051	103.2000	1.8910
64	1977.04	0.0000	2.1007	105.6000	1.8910
65	1977.05	0.0000	2.0990	110.5000	1.8910
66	1977.06	0.0000	2.0971	110.5000	1.8910
67	1977.07	0.0000	2.1254	110.5000	1.9170
68	1977.08	0.0000	2.1248	110.5000	1.9170
69	1977.09	0.0000	2.1246	110.5000	1.9170
70	1977.10	0.0000	2.0724	110.5000	1.8710
71	1977.11	0.0000	2.0718	110.5000	1.8710
72	1977.12	0.0000	2.0696	110.5000	1.8710
73	1978.01	0.0000	2.1448	110.5000	1.9410
74	1978.02	0.0000	2.1448	110.5000	1.9410
75	1978.03	0.0000	2.1454	110.5000	1.9410
76	1978.04	0.0000	2.0838	110.5000	1.8870
77	1978.05	0.0000	2.0829	110.5000	1.8870
78	1978.06	0.0000	2.0828	110.5000	1.8870
79	1978.07	0.0000	2.1308	110.5000	1.9310
80	1978.08	0.0000	2.1309	110.5000	1.9310
81	1978.09	0.0000	2.1308	110.5000	1.9310
82	1978.10	0.0000	2.2437	110.5000	2.0340
83	1978.11	0.0000	2.2456	110.5000	2.0340
84	1978.12	0.0000	2.2475	110.5000	2.0340
85	1979.01	0.0000	2.2557	110.5000	2.0400
86	1979.02	0.0000	2.2558	110.5000	2.0400
87	1979.03	0.0000	2.2561	116.9000	2.0400
88	1979.04	0.0000	2.3120	132.6000	2.0900
89	1979.05	0.0000	2.3116	132.6000	2.0900
90	1979.06	0.0000	2.3102	132.6000	2.0900
91	1979.07	0.0000	2.4539	132.6000	2.2210
92	1979.08	0.0000	2.4543	171.4000	2.2210
93	1979.09	0.0000	2.4545	171.4000	2.2210
94	1979.10	0.0000	2.4109	171.4000	2.1820
95	1979.11	0.0000	2.4112	171.4000	2.1820
96	1979.12	0.0000	2.4240	171.4000	2.1820
97	1980.01	0.0000	2.5438	171.4000	2.3200
98	1980.02	0.0000	2.5442	224.9000	2.3200
99	1980.03	0.0000	2.5469	241.9000	2.3200
100	1980.04	0.0000	2.6707	241.9000	2.4270

CASE NO.	PERIOD	PCFOOD3L	PM1	PMOILDP	PMQUSNF
101	1980.05	0.0000	2.6944	241.9000	2.4270
102	1980.06	0.0000	2.6985	241.9000	2.4270
103	1980.07	0.0000	2.6797	241.9000	2.4030
104	1980.08	-.1985	2.6843	272.8000	2.4030
105	1980.09	.8329	2.6865	272.8000	2.4030
106	1980.10	.8329	2.7071	272.8000	2.4200
107	1980.11	.8329	2.7120	272.8000	2.4200
108	1980.12	.8329	2.7169	272.8000	2.4200
109	1981.01	.8329	2.6221	272.8000	2.4800
110	1981.02	.8329	2.6343	272.8000	2.4800
111	1981.03	1.5217	2.6558	281.9000	2.4800
112	1981.04	1.5217	2.7433	298.4000	2.5420
113	1981.05	1.5217	2.7645	298.4000	2.5420
114	1981.06	1.9359	2.7946	298.4000	2.5420
115	1981.07	2.3961	2.7177	298.4000	2.4680
116	1981.08	2.3961	2.7186	298.4000	2.4680
117	1981.09	2.3961	2.7324	298.4000	2.4680
118	1981.10	2.3961	2.7325	298.4000	2.4460
119	1981.11	2.3961	2.7450	298.4000	2.4460
120	1981.12	2.3961	2.7552	298.4000	2.4460
121	1982.01	2.3961	2.7656	298.4000	2.4930
122	1982.02	2.3961	2.7752	298.4000	2.4930
123	1982.03	2.5006	2.7945	298.4000	2.4930
124	1982.04	2.5802	2.6160	298.4000	2.3230
125	1982.05	2.5802	2.6275	298.4000	2.3230
126	1982.06	2.7318	2.6382	298.4000	2.3230
127	1982.07	2.8809	2.6932	295.4000	2.3610
128	1982.08	2.8809	2.7064	290.2000	2.3610
129	1982.09	2.8809	2.7409	290.2000	2.3610
130	1982.10	2.8809	2.5766	290.2000	2.1870
131	1982.11	2.8809	2.6086	290.2000	2.1870
132	1982.12	2.8809	2.6832	290.2000	2.1870
133	1983.01	2.8809	3.0617	290.2000	2.4160
134	1983.02	2.8809	3.1204	290.2000	2.4160
135	1983.03	2.8809	3.1669	290.2000	2.4160
136	1983.04	2.8809	3.2188	290.2000	2.3900
137	1983.05	2.8809	3.2718	290.2000	2.3900
138	1983.06	2.9151	3.3773	290.2000	2.3900
139	1983.07	2.9151	3.4080	322.1000	2.2700
140	1983.08	2.9580	3.4080	322.1000	2.2700
141	1983.09	2.9882	3.4080	322.1000	2.2700
142	1983.10	3.3268	4.3977	322.1000	2.3520
143	1983.11	3.4834	4.5622	415.4000	2.3520
144	1983.12	3.9373	4.5622	422.1000	2.3520
145	1984.01	3.9394	4.9559	422.1000	2.5550
146	1984.02	3.9589	4.9559	422.1000	2.5550
147	1984.03	4.0182	4.9559	422.1000	2.5550
148	1984.04	4.0865	4.8924	422.1000	2.4670
149	1984.05	4.1543	4.8924	436.4000	2.4670
150	1984.06	4.5686	6.1691	555.0400	2.4670

CASE NO.	PERIOD	PCFOOD3L	PM1	PMOILDP	PMQUSNF
151	1984.07	4.6903	6.1594	584.7000	2.3810
152	1984.08	4.6939	6.1594	584.7000	2.3810
153	1984.09	4.6939	6.1594	584.7000	2.3810
154	1984.10	4.7180	6.1498	616.3600	2.2350
155	1984.11	4.8421	6.4102	666.5000	2.2350
156	1984.12	4.8421	6.3782	666.5000	2.2350
157	1985.01	4.8619	6.0370	650.1800	2.2960
158	1985.02	4.9024	5.8070	644.5000	2.2960
159	1985.03	4.9024	5.8770	600.6400	2.2960
MEAN		1.0248	2.5426	190.6101	1.9911
STD. DEV.		1.5804	1.2270	156.2223	.4318

Name: MONBASE .DAT

CASE NO.	PERIOD	PXPEXP	PXQUS	TARIFF	TL
1	1972.01	96.4623	100.0000	1.4500	10229.2002
2	1972.02	96.4623	100.0000	1.4500	10103.5996
3	1972.03	96.4623	100.0000	1.4500	10381.5996
4	1972.04	98.5594	100.0000	1.4500	10125.2002
5	1972.05	100.7645	100.0000	1.4500	10161.7998
6	1972.06	101.5110	100.0000	1.4500	10390.7998
7	1972.07	101.6010	100.0000	1.4500	9971.9004
8	1972.08	101.6264	100.0000	1.4500	10106.2002
9	1972.09	101.6264	100.0000	1.4500	10712.2002
10	1972.10	101.6519	100.0000	1.4500	10764.2002
11	1972.11	101.6429	100.0000	1.4500	10931.7998
12	1972.12	101.6399	100.0000	1.4500	11871.0996
13	1973.01	116.1916	114.3000	1.4500	12909.2002
14	1973.02	116.1025	114.3000	1.4500	12912.4004
15	1973.03	116.0288	114.3000	1.4500	13945.2002
16	1973.04	139.3608	137.4000	1.4500	13517.2998
17	1973.05	139.2990	137.4000	1.4500	14112.2002
18	1973.06	139.2166	137.4000	1.4500	15179.2998
19	1973.07	161.5873	159.5000	1.4500	14782.4004
20	1973.08	161.3100	159.5000	1.4500	15835.0000
21	1973.09	161.1306	159.5000	1.4500	16204.2002
22	1973.10	186.4983	184.6000	1.4500	16165.4004
23	1973.11	186.4596	184.6000	1.4500	16778.0996
24	1973.12	186.3793	184.6000	1.4500	18063.0000
25	1974.01	210.6780	208.8000	1.4500	17918.8008
26	1974.02	210.2993	208.8000	1.4500	18625.5000
27	1974.03	210.4401	208.8000	1.4500	20206.0000
28	1974.04	245.5485	243.7000	1.4500	20062.3008
29	1974.05	245.3951	243.7000	1.4500	20604.4004
30	1974.06	245.4316	243.7000	1.4500	21601.5000
31	1974.07	251.6768	249.3000	1.4500	21942.8008
32	1974.08	251.9832	249.3000	1.4500	22245.4004
33	1974.09	252.1514	249.3000	1.4500	22552.5996
34	1974.10	248.9271	245.2000	1.4500	22650.1992
35	1974.11	259.7554	245.2000	1.4500	23063.9004
36	1974.12	259.5827	245.2000	1.4500	24242.0996
37	1975.01	251.5770	237.5000	1.4500	23908.0996
38	1975.02	251.0714	237.5000	1.4500	24046.8008
39	1975.03	250.1422	237.5000	1.4500	25277.5996
40	1975.04	218.2840	207.5000	1.4500	25309.1992
41	1975.05	218.2871	207.5000	1.4500	25204.5000
42	1975.06	218.2000	207.5000	1.4500	25590.1992
43	1975.07	190.7634	175.0000	1.4500	25659.8008
44	1975.08	196.7943	175.0000	1.4500	25692.1992
45	1975.09	196.9858	175.0000	1.4500	26381.1992
46	1975.10	180.5601	160.6000	1.4500	26852.6992
47	1975.11	180.4975	160.6000	1.4500	27473.8008
48	1975.12	180.5384	160.6000	1.4500	28885.8008
49	1976.01	168.6532	150.3000	1.4500	28981.8008
50	1976.02	168.2860	150.3000	1.4500	28938.4004

CASE NO.	PERIOD	PXPEXP	PXQUS	TARIFF	TL
51	1976.03	168.0381	150.3000	1.4500	30331.9004
52	1976.04	186.3587	167.2000	1.4500	30761.9004
53	1976.05	186.2334	167.2000	1.4500	31152.1992
54	1976.06	186.2459	167.2000	1.4500	32311.3008
55	1976.07	193.3463	173.6000	1.4500	32432.1992
56	1976.08	193.3437	173.6000	1.4500	32532.1992
57	1976.09	193.3255	173.6000	1.4500	33572.6016
58	1976.10	195.0889	175.2000	1.4500	33293.8984
59	1976.11	195.0863	175.2000	1.4500	33924.3984
60	1976.12	195.0863	175.2000	1.4500	35897.3984
61	1977.01	180.8261	162.4000	1.4500	36386.1992
62	1977.02	180.8091	162.4000	1.4500	36866.3984
63	1977.03	180.7847	162.4000	1.4500	38453.1016
64	1977.04	211.2956	190.2000	1.4500	38384.3008
65	1977.05	211.1246	190.2000	1.4500	39002.8008
66	1977.06	210.9307	190.2000	1.4500	39591.3984
67	1977.07	187.9237	169.5000	1.4500	39209.8008
68	1977.08	187.8703	169.5000	1.4500	39746.8008
69	1977.09	187.8551	169.5000	1.4500	40051.3008
70	1977.10	179.8840	162.4000	1.4500	41094.6016
71	1977.11	179.8280	162.4000	1.4500	41832.8984
72	1977.12	179.6381	162.4000	1.4500	43931.1016
73	1978.01	206.6362	187.0000	1.4500	43594.1016
74	1978.02	206.6362	187.0000	1.4500	43826.8984
75	1978.03	206.6923	187.0000	1.4500	45064.1016
76	1978.04	204.5168	185.2000	1.4500	44877.8984
77	1978.05	204.4252	185.2000	1.4500	45382.1016
78	1978.06	204.4168	185.2000	1.4500	46705.1016
79	1978.07	200.1736	181.4000	1.4500	46954.8008
80	1978.08	200.1817	181.4000	1.4500	46987.5000
81	1978.09	200.1709	181.4000	1.4500	48102.8008
82	1978.10	241.4725	218.9000	1.4500	49743.1992
83	1978.11	241.6727	218.9000	1.4500	50167.1992
84	1978.12	241.8761	218.9000	1.4500	51837.1992
85	1979.01	251.6599	227.6000	1.4500	50885.5000
86	1979.02	251.6769	227.6000	1.4500	51646.1992
87	1979.03	251.7111	227.6000	1.4500	52763.1016
88	1979.04	259.8513	234.9000	1.4500	53380.8008
89	1979.05	259.8055	234.9000	1.4500	53106.8008
90	1979.06	259.6506	234.9000	1.4500	52799.8008
91	1979.07	271.5775	245.8000	1.4500	52866.3008
92	1979.08	271.6180	245.8000	1.4500	52562.0000
93	1979.09	271.6365	245.8000	1.4500	53672.5000
94	1979.10	255.7882	231.5000	1.4500	54046.1016
95	1979.11	255.8195	231.5000	1.4500	54330.1992
96	1979.12	257.1798	231.5000	1.4500	57359.6992
97	1980.01	275.4997	247.8000	1.4300	56543.6992
98	1980.02	275.5443	247.8000	1.4300	57117.0000
99	1980.03	275.8414	247.8000	1.4300	59141.1016
100	1980.04	262.2094	235.0000	1.4300	57488.3984

CASE NO.	PERIOD	PXPEXP	PXQUS	TARIFF	TL
101	1980.05	264.5379	235.0000	1.4300	56761.3984
102	1980.06	264.9395	235.0000	1.4300	57944.1992
103	1980.07	272.5096	241.0000	1.4300	59780.1992
104	1980.08	272.9792	241.0000	1.4300	60374.1992
105	1980.09	273.1960	241.0000	1.4300	61223.5000
106	1980.10	286.6370	252.7000	1.4300	61234.1992
107	1980.11	287.1522	252.7000	1.4300	62218.1992
108	1980.12	287.6712	252.7000	1.4300	67803.2031
109	1981.01	300.5554	262.7000	1.3400	69906.6016
110	1981.02	301.9456	262.7000	1.3400	71519.8984
111	1981.03	304.4146	262.7000	1.3400	72420.2031
112	1981.04	282.6078	242.0000	1.3400	74193.2031
113	1981.05	284.7844	242.0000	1.3400	75030.0000
114	1981.06	287.8896	242.0000	1.3400	74878.7969
115	1981.07	276.2107	231.8000	1.3400	74556.1016
116	1981.08	276.2975	231.8000	1.3400	76213.6016
117	1981.09	277.7013	231.8000	1.3400	75749.0000
118	1981.10	266.6678	220.6000	1.3400	78728.7031
119	1981.11	267.8846	220.6000	1.3400	79111.1016
120	1981.12	268.8866	220.6000	1.3400	82091.2969
121	1982.01	252.7857	204.3000	1.3000	80986.1016
122	1982.02	253.6677	204.3000	1.3000	82295.0000
123	1982.03	255.4286	204.3000	1.3000	85492.8984
124	1982.04	258.4979	205.8000	1.3000	85783.2969
125	1982.05	259.6362	205.8000	1.3000	87188.5000
126	1982.06	260.6882	205.8000	1.3000	87596.1016
127	1982.07	249.2520	195.9000	1.3000	87371.0000
128	1982.08	250.4707	195.9000	1.3000	88308.7031
129	1982.09	253.6627	195.9000	1.3000	89636.2969
130	1982.10	256.2506	195.0000	1.3000	89449.2031
131	1982.11	259.4310	195.0000	1.3000	91704.0000
132	1982.12	264.8153	195.0000	1.3100	95297.8984
133	1983.01	358.0405	257.2000	1.3200	94730.5000
134	1983.02	364.8994	257.2000	1.3200	95476.0000
135	1983.03	370.3472	257.2000	1.3200	96774.6016
136	1983.04	328.4342	222.0000	1.3200	97418.2031
137	1983.05	333.8353	222.0000	1.3200	98710.2031
138	1983.06	344.6075	222.0000	1.3200	99789.1016
139	1983.07	314.4992	190.7000	1.3200	99249.7969
140	1983.08	314.4964	190.7000	1.3200	99548.6016
141	1983.09	314.5020	190.7000	1.3200	100722.7969
142	1983.10	383.0533	186.5000	1.3200	103607.2969
143	1983.11	391.4515	186.5000	1.3400	107850.6016
144	1983.12	391.4515	186.5000	1.3400	112962.0000
145	1984.01	481.4958	229.4000	1.3400	112153.0000
146	1984.02	481.4958	229.4000	1.3400	112497.0000
147	1984.03	481.4958	229.4000	1.3400	116259.0000
148	1984.04	536.4880	255.6000	1.3700	116248.0000
149	1984.05	536.4880	255.6000	1.3700	114928.0000
150	1984.06	666.7593	255.6000	1.3900	112036.0000

CASE NO.	PERIOD	PXPEXP	PXQUS	TARIFF	TL
151	1984.07	625.2531	231.7000	1.3900	111303.0000
152	1984.08	625.2531	231.7000	1.3900	110349.0000
153	1984.09	625.2531	231.7000	1.3900	108266.0000
154	1984.10	602.5181	209.9100	1.3900	108165.0000
155	1984.11	628.0308	209.9100	1.3900	110911.0000
156	1984.12	624.8937	209.9100	1.3900	120404.0000
157	1985.01	570.7192	200.6000	1.3400	122298.0000
158	1985.02	548.9572	200.6000	1.3400	122907.0000
159	1985.03	555.6358	200.6000	1.3400	119363.0000
MEAN		259.0526	198.2021	1.4116	53657.5898
STD. DEV.		120.7160	44.0542	.0554	33178.2539

Name: MONBASE .DAT

CASE NO	PERIOD	TLGNP	TOTTGQ3	WLNANCR
1	1972.01	.3742	1.5117	8.0000
2	1972.02	.3696	1.5068	8.0000
3	1972.03	.3797	1.5122	8.0000
4	1972.04	.3704	1.4939	8.0000
5	1972.05	.3717	1.4914	8.0000
6	1972.06	.3801	1.5019	8.0000
7	1972.07	.3487	1.4709	8.0000
8	1972.08	.3534	1.4539	8.0000
9	1972.09	.3746	1.4568	8.0000
10	1972.10	.3764	1.4531	8.0000
11	1972.11	.3822	1.4866	8.0000
12	1972.12	.4151	1.5483	8.0000
13	1973.01	.4311	1.6048	8.0000
14	1973.02	.4312	1.6596	8.0000
15	1973.03	.4657	1.7431	8.0000
16	1973.04	.4514	1.7794	8.0000
17	1973.05	.4713	1.8196	8.0000
18	1973.06	.5069	1.8953	8.0000
19	1973.07	.4733	1.9029	8.0000
20	1973.08	.5070	1.9585	8.0000
21	1973.09	.5188	2.0060	8.0000
22	1973.10	.5176	2.0167	8.0000
23	1973.11	.5372	2.0806	8.0000
24	1973.12	.5783	2.1519	8.0000
25	1974.01	.5635	2.1966	8.0000
26	1974.02	.5857	2.2647	8.0000
27	1974.03	.6354	2.3629	8.0000
28	1974.04	.6309	2.4155	8.0000
29	1974.05	.6480	2.5000	8.0000
30	1974.06	.6793	2.5936	8.0000
31	1974.07	.6695	2.6277	8.0000
32	1974.08	.6787	2.6755	9.9800
33	1974.09	.6881	2.7156	9.9800
34	1974.10	.6910	2.7273	9.9800
35	1974.11	.7037	2.7615	9.9800
36	1974.12	.7396	2.8224	9.9800
37	1975.01	.7167	2.8510	9.9800
38	1975.02	.7209	2.8809	9.9800
39	1975.03	.7578	2.9350	9.9800
40	1975.04	.7587	2.9541	9.9800
41	1975.05	.7556	2.9930	9.9800
42	1975.06	.7671	3.0392	9.9800
43	1975.07	.7311	3.0125	9.9800
44	1975.08	.7320	2.9858	9.9800
45	1975.09	.7516	2.9818	9.9800
46	1975.10	.7651	2.9798	9.9800
47	1975.11	.7828	3.0315	9.9800
48	1975.12	.8230	3.1225	10.6500
49	1976.01	.8017	3.1726	10.6500
50	1976.02	.8005	3.2080	10.6500

CASE NO.	PERIOD	TLGNP	TOTTGQ3	WLNANCR
51	1976.03	.8390	3.2642	10.6500
52	1976.04	.8509	3.2921	10.6500
53	1976.05	.8617	3.3521	12.8100
54	1976.06	.8938	3.4454	12.8100
55	1976.07	.8690	3.4754	12.8100
56	1976.08	.8717	3.4962	12.8100
57	1976.09	.8996	3.5341	12.8100
58	1976.10	.8921	3.5324	12.8100
59	1976.11	.9090	3.5724	12.8100
60	1976.12	.9619	3.6626	12.8100
61	1977.01	.9492	3.7122	12.8100
62	1977.02	.9617	3.7818	12.8100
63	1977.03	1.0031	3.8759	12.8100
64	1977.04	1.0013	3.9153	12.8100
65	1977.05	1.0174	3.9835	15.1900
66	1977.06	1.0328	4.0546	15.1900
67	1977.07	.9848	4.0363	15.1900
68	1977.08	.9982	4.0332	15.1900
69	1977.09	1.0059	4.0217	15.1900
70	1977.10	1.0321	4.0210	15.1900
71	1977.11	1.0506	4.0868	15.1900
72	1977.12	1.1033	4.1919	15.1900
73	1978.01	1.0701	4.2561	15.1900
74	1978.02	1.0758	4.2998	15.1900
75	1978.03	1.1061	4.3553	15.1900
76	1978.04	1.1016	4.3536	15.1900
77	1978.05	1.1139	4.3974	15.1900
78	1978.06	1.1464	4.4680	15.1900
79	1978.07	1.1206	4.4825	16.2800
80	1978.08	1.1213	4.5022	16.2800
81	1978.09	1.1480	4.5363	16.2800
82	1978.10	1.1871	4.5770	16.2800
83	1978.11	1.1972	4.6536	16.2800
84	1978.12	1.2371	4.7694	16.2800
85	1979.01	1.1714	4.7928	16.2800
86	1979.02	1.1889	4.7946	16.2800
87	1979.03	1.2146	4.8120	16.2800
88	1979.04	1.2288	4.8037	16.2800
89	1979.05	1.2225	4.8548	20.8100
90	1979.06	1.2154	4.8813	20.8100
91	1979.07	1.1770	4.8437	20.8100
92	1979.08	1.1703	4.7852	20.8100
93	1979.09	1.1950	4.7577	23.2000
94	1979.10	1.2033	4.7456	23.2000
95	1979.11	1.2096	4.7782	23.2000
96	1979.12	1.2771	4.8850	23.2000
97	1980.01	1.2479	4.9379	24.3800
98	1980.02	1.2606	4.9952	26.3800
99	1980.03	1.3053	5.0909	26.3800
100	1980.04	1.2688	5.0826	26.3800

CASE NO.	PERIOD	TLGNP	TOTTGQ3	WLNANCR
101	1980.05	1.2527	5.0874	26.3800
102	1980.06	1.2788	5.1056	26.3800
103	1980.07	1.2577	5.0580	26.3800
104	1980.08	1.2702	5.0594	29.8500
105	1980.09	1.2881	5.0948	29.8500
106	1980.10	1.2883	5.1043	29.8500
107	1980.11	1.3090	5.1556	29.8500
108	1980.12	1.4265	5.3119	29.8500
109	1981.01	1.4575	5.4813	29.8500
110	1981.02	1.4911	5.6841	29.8500
111	1981.03	1.5099	5.8850	31.8200
112	1981.04	1.5469	6.0054	31.8200
113	1981.05	1.5643	6.1122	31.8200
114	1981.06	1.5612	6.1823	31.8200
115	1981.07	1.5611	6.2335	31.8200
116	1981.08	1.5958	6.2824	31.8200
117	1981.09	1.5861	6.3042	31.8200
118	1981.10	1.6485	6.3915	31.8200
119	1981.11	1.6565	6.4869	31.8200
120	1981.12	1.7189	6.6100	31.8200
121	1982.01	1.6605	6.6844	31.8200
122	1982.02	1.6873	6.7232	31.8200
123	1982.03	1.7529	6.8196	31.8200
124	1982.04	1.7588	6.8595	31.8200
125	1982.05	1.7876	6.9866	31.8200
126	1982.06	1.7960	7.0953	31.8200
127	1982.07	1.7916	7.1340	31.8200
128	1982.08	1.8109	7.1861	31.8200
129	1982.09	1.8381	7.2366	31.8200
130	1982.10	1.8343	7.2749	31.8200
131	1982.11	1.8805	7.3638	31.8200
132	1982.12	1.9542	7.5071	31.8200
133	1983.01	1.8703	7.5393	31.8200
134	1983.02	1.8850	7.5900	31.8200
135	1983.03	1.9107	7.6202	31.8200
136	1983.04	1.9234	7.5894	31.8200
137	1983.05	1.9489	7.6680	31.8200
138	1983.06	1.9702	7.7532	31.8200
139	1983.07	2.0604	7.9029	34.4000
140	1983.08	2.0667	8.0462	34.4000
141	1983.09	2.0910	8.1883	34.4000
142	1983.10	2.1509	8.3690	35.4000
143	1983.11	2.2390	8.5476	39.4900
144	1983.12	2.3451	8.8260	42.0700
145	1984.01	2.3418	9.0770	42.0700
146	1984.02	2.3490	9.2750	42.0700
147	1984.03	2.4276	9.4640	42.0700
148	1984.04	2.4273	9.5460	42.0700
149	1984.05	2.3998	9.6040	43.6700
150	1984.06	2.3394	9.5940	47.8100

CASE NO.	PERIOD	TLGNP	TOTTGQ3	WLNANCR
151	1984.07	2.4466	9.6130	51.9200
152	1984.08	2.4256	9.6110	51.9200
153	1984.09	2.3798	9.5910	51.9200
154	1984.10	2.3776	9.6290	51.9200
155	1984.11	2.4380	9.6200	57.0000
156	1984.12	2.6466	9.8410	57.0000
157	1985.01	2.7900	10.2522	57.0000
158	1985.02	2.8040	10.6783	57.0000
159	1985.03	2.7230	10.9633	57.0000
MEAN		1.2310	4.8343	21.5177
STD. DEV.		.6263	2.4503	13.3242

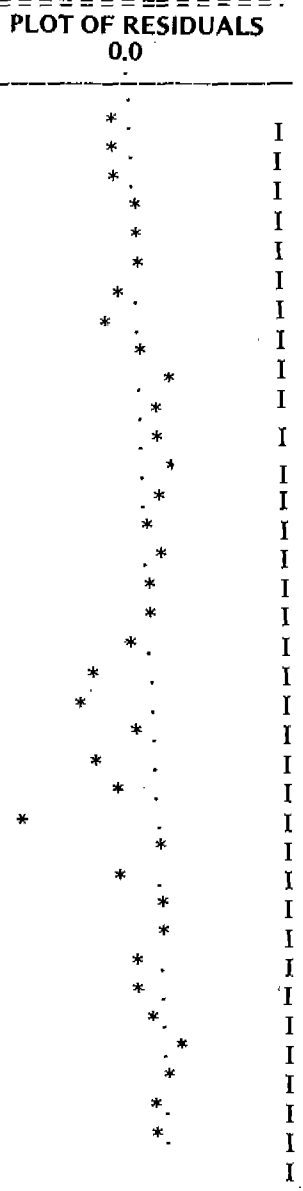
APPENDIX 2

TABLE OF RESIDUALS IN THE PRICE EQUATION

CASE NO.	Y ACT	Y EST.	RESDL.	PCT. ERROR
1	100.300	99.261	-1.039	-1.036
2	100.100	100.172	.072	.072
3	99.900	99.528	-.372	-.373
4	98.900	99.453	.553	.559
5	98.400	99.297	.897	.912
6	98.600	99.854	1.254	1.272
7	100.600	100.325	-.275	-.274
8	103.600	101.805	-1.795	-1.732
9	103.600	104.432	.832	.803
10	100.100	103.420	3.320	3.317
11	98.000	99.598	1.598	1.630
12	97.400	98.830	1.430	1.468
13	97.500	100.826	3.326	3.412
14	98.000	100.664	2.664	2.718
15	99.800	100.928	1.128	1.130
16	102.000	103.744	1.744	1.710
17	105.400	106.030	.630	.598
18	108.000	108.768	.768	.711
19	112.200	111.703	-.497	-.443
20	119.500	114.736	-4.764	-3.986
21	125.400	119.112	-6.288	-5.015
22	122.900	122.610	-.290	-.236
23	125.500	121.305	-4.195	-3.343
24	130.000	126.708	-3.292	-2.533
25	142.400	133.281	-9.119	-6.404
26	144.300	145.094	.794	.551
27	148.100	144.968	-3.132	-2.115
28	149.900	150.852	.952	.635
29	152.300	152.527	.227	.149
30	157.000	154.675	-2.325	-1.481
31	161.900	159.472	-2.428	-1.499
32	164.600	164.357	-.243	-.147
33	164.100	166.002	1.902	1.159
34	163.400	164.355	.955	.585
35	165.700	164.911	-.789	-.476
36	167.900	167.776	-.124	-.074

TABLE OF RESIDUALS

PLOT OF RESIDUALS



37	165.300	169.041	3.741	2.263	I	. * I
38	164.800	166.368	1.568	.951	I	. * I
39	164.000	167.042	3.042	1.855	I	. * I
40	164.700	165.900	1.200	.729	I	* I
41	165.800	166.988	1.188	.716	I	* I
42	165.400	168.230	2.830	1.711	I	. * I
43	167.200	166.535	-.665	-.398	I	*. I
44	167.900	168.997	1.097	.653	I	* I
45	168.800	169.530	.730	.433	I	* I
46	169.000	169.749	.749	.443	I	* I
47	169.800	170.070	.270	.159	I	* I
48	170.300	171.558	1.258	.739	I	* I
49	174.300	172.515	-1.785	-1.024	I	* . I
50	175.900	176.664	.764	.434	I	* I
51	177.500	176.731	-.769	-.433	I	*. I
52	178.400	178.361	-.039	-.022	I	*. I
53	180.000	180.498	.498	.276	I	* I
54	181.700	182.197	.497	.273	I	* I
55	184.000	183.592	-.408	-.222	I	*. I
56	185.100	185.753	.653	.353	I	* I
57	186.100	186.229	.129	.069	I	* I
58	186.600	187.188	.588	.315	I	* I
59	188.100	188.122	.022	.012	I	*. I
60	189.600	190.079	.479	.253	I	* I
61	191.300	191.439	.139	.072	I	* I
62	192.500	192.732	.232	.120	I	* I
63	193.900	193.911	.011	.006	I	*. I
64	195.000	195.825	.825	.423	I	* I
65	196.600	198.696	2.096	1.066	I	. * I
66	199.000	200.562	1.562	.785	I	. * I
67	202.200	201.728	-.472	-.234	I	*. I
68	204.700	204.085	-.615	-.300	I	*. I
69	205.800	205.654	-.146	-.071	I	*. I
70	206.400	205.453	-.947	-.459	I	*. I
71	207.500	206.338	-1.162	-.560	I	*. I
72	209.300	207.812	-1.488	-.711	I	* . I
73	210.900	210.989	.089	.042	I	*. I
74	211.000	211.366	.366	.174	I	* I
75	210.200	211.961	1.761	.838	I	. * I
76	210.500	210.669	.169	.080	I	* I
77	210.800	211.135	.335	.159	I	* I

78	212.100	211.559	-.541	-.255	I	I
79	214.800	213.642	-1.158	-.539	I	I
80	216.400	215.719	-.681	-.315	I	I
81	217.800	216.764	-1.036	-.476	I	I
82	219.500	220.662	1.162	.529	I	I
83	222.400	222.651	.251	.113	I	I
84	223.500	225.890	2.390	1.069	I	I
85	227.100	227.153	.053	.024	I	I
86	228.700	230.265	1.565	.684	I	I
87	229.900	231.263	1.363	.593	I	I
88	240.200	233.372	-6.828	-2.843	I	I
89	244.800	246.176	1.376	.562	I	I
90	249.200	247.963	-1.237	-.496	I	I
91	254.300	252.215	-2.085	-.820	I	I
92	260.000	257.858	-2.142	-.824	I	I
93	264.100	263.170	-.930	-.352	I	I
94	267.300	264.616	-2.684	-1.004	I	I
95	269.200	266.901	-2.299	-.854	I	I
96	271.500	268.276	-3.224	-1.188	I	I
97	275.300	272.399	-2.901	-1.054	I	I
98	278.700	280.108	1.408	.505	I	I
99	284.700	284.056	-.644	-.226	I	I
100	286.800	289.427	2.627	.916	I	I
101	289.400	289.820	.420	.145	I	I
102	292.200	291.876	-.324	-.111	I	I
103	296.200	293.797	-2.403	-.811	I	I
104	299.800	300.892	1.092	.364	I	I
105	304.500	304.374	-.126	-.041	I	I
106	306.800	308.552	1.752	.571	I	I
107	309.200	309.829	.629	.204	I	I
108	312.200	312.353	.153	.049	I	I
109	316.900	315.120	-1.780	-.562	I	I
110	319.300	320.062	.762	.239	I	I
111	320.500	324.739	4.239	1.323	I	I
112	323.100	326.958	3.858	1.194	I	I
113	325.500	329.987	4.487	1.378	I	I
114	328.500	332.664	4.164	1.268	I	I
115	335.400	335.398	-.002	-.001	I	I
116	337.200	341.219	4.019	1.192	I	I
117	338.400	341.039	2.639	.780	I	I
118	340.300	341.764	1.464	.430	I	I
119	343.000	344.175	1.175	.343	I	I

120	345.600	347.013	1.413	.409	I	. * I
121	353.000	348.903	-4.097	-1.161	I	* . I
122	355.500	356.046	.546	.153	I	* I
123	357.200	357.138	-.062	-.017	I	* . I
124	359.500	357.131	-2.369	-.659	I	* . I
125	360.500	360.040	-.460	-.128	I	* . I
126	362.600	361.367	-1.233	-.340	I	* . I
127	369.100	363.445	-5.655	-1.532	I	* . I
128	371.600	368.999	-2.601	-.700	I	* . I
129	373.300	370.310	-2.990	-.801	I	* . I
130	373.900	370.421	-3.479	-.930	I	* . I
131	374.500	371.321	-3.179	-.849	I	* . I
132	374.700	373.076	-1.624	-.433	I	* . I
133	377.000	378.671	1.671	.443	I	. * I
134	378.900	381.864	2.964	.782	I	. * I
135	379.800	383.896	4.096	1.079	I	. * I
136	381.700	383.082	1.382	.362	I	* I
137	384.400	385.512	1.112	.289	I	* I
138	389.000	388.945	-.055	-.014	I	* . I
139	398.300	396.264	-2.036	-.511	I	* . I
140	405.500	405.494	-.006	-.001	I	* . I
141	407.200	411.115	3.915	.961	I	. * I
142	412.300	421.740	9.440	2.289	I	. * I
143	437.600	438.592	.992	.227	I	* I
144	472.400	466.041	-6.359	-1.346	I	* . I
145	502.540	500.161	-2.379	-.473	I	* . I
146	517.730	520.127	2.397	.463	I	. * I
147	529.180	526.674	-2.506	-.474	I	* . I
148	537.200	536.100	-1.100	-.205	I	* . I
149	546.230	545.912	-.318	-.058	I	* . I
150	580.540	581.361	.821	.141	I	* I
151	632.460	619.670	-12.790	-2.022	*	. I
152	650.220	661.934	11.714	1.802	I	. * I
153	666.100	667.824	1.724	.259	I	. * I
154	675.430	680.211	4.781	.708	I	. * I
155	702.650	691.419	-11.231	-1.598	I*	. I
156	712.520	715.542	3.022	.424	I	. * I
157	729.990	727.547	-2.443	-.335	I	* . I
158	736.730	738.063	1.333	.181	I	* I
159	739.740	740.848	1.108	.150	I	* I

APPENDIX 3

PRINTOUT OF INFLATION FORECASTS FOR JUNE-DECEMBER 1985 UNDER ALTERNATIVE SCENARIOS FOR REAL OUTPUT (GNP), AND THE OFFICIAL EXCHANGE RATE (ER)

Scenario A/A	GNP	:	−2% in 1985
	ER	:	₱19/$1 in the 3rd quarter
			₱20/$1 in the 4th quarter
Scenario A/B	GNP	:	−2% in 1985
	ER	:	₱20/$1 in the 3rd quarter
			₱22/$1 in the 4th quarter
Scenario B/C	GNP	:	−3% in 1985
	ER	:	₱22/$1 in the 3rd quarter
			₱24/$1 in the 4th quarter

EQ5*
JUN–DEC

INFLATION FORECASTS FOR 1985
SCENARIO A/A

PMOILDP	PM1	MERBM	MONER	ERBMERP	MONTL	GNPSEM	TLGNP	TOTTGQ3	CPI 85	CPI 84	INF RATE (YEAR)	INF RATE (MONTH)	MO
650.18	6.037	17.78	18.9794	93.65	122.298	43.836	2.790	10.25215	729.99	502.54	45.26	2.45	J
644.50	5.807	17.00	18.2557	93.12	122.907	43.836	2.804	10.67832	736.73	517.73	42.30	.92	F
600.64	5.877	17.58	18.4778	95.14	119.363	43.836	2.728	10.96328	529.18	739.74	39.79	.41	M
592.20	5.889	18.15	18.5	98.11	120	45.958	2.611	10.92771	736.18	537.20	37.04	.48	A
592.20	5.889	18.50	18.5	100.00	122	45.958	2.655	10.79241	737.36	546.23	34.99	.16	M
592.20	5.889	18.50	18.5	100.00	124	45.958	2.698	10.68674	738.06	580.54	27.13	.10	J
607.14	6.054	19.00	19	100.00	126	44.268	2.846	10.81009	741.15	632.46	17.19	.42	J
607.14	6.054	19.00	19	100.00	128	44.268	2.891	11.09049	745.48	650.22	14.65	.58	A
607.14	6.054	19.00	19	100.00	130	44.268	2.937	11.37255	750.32	666.10	12.64	.65	S
636.96	6.378	20.00	20	100.00	132	48.97	2.696	11.36997	758.51	675.43	12.30	1.09	O
636.96	6.378	20.00	20	100.00	134	48.97	2.736	11.26003	764.48	702.65	8.80	.79	N
636.96	6.378	20.00	20	100.00	136	48.97	2.777	11.14577	767.28	712.52	7.68	.37	D

AVE CPI FOR 1985 = 745.4
ANN IR FOR 1985 = 23.34

PMOILDP = PMOILDP (–1) * (1 + .9332 * ((MONER – MONER (–1))/MONER (–1)))
PXPEXP = PXQUS*MONER/6.671
PM1 = PMQUSNF*MONER/6.671*TARIFF/1.45
ERBMERP =MERBM/MONER*100
TLGNP = MONTL/GNPSEM
TOTTGQ3 = TLGNP + TLGNP (–1) + TLGNP (–2) + TLGNP (–3)
CPI = –7.9569+(.042427*ERBMERP) + (.97448*LAGCPI1)–(.29286*LAGCPI2)
+ (.063435*PMOILDP)+(.028961*PX)+(7.2317*PMPES1)+(.98363*PCFOOD3L)
+ (5.4133*TOTTGQ3)+(.92480*91–DAY)+(.60964*WLNANCR)+(18.886*DUM85)

INFLATION FORECASTS FOR 1985
SCENARIO A/B

EQ5*
JUN–DEC

PMOILDP	PM1	MERBM	MONER	ERBMERP	MONTL	GNPSEM	TLGNP	TOTTGQ3	CPI 85	CPI 85	INF RATE (YEAR)	INF RATE (MONTH)	MO
650.18	6.037	17.78	18.9794	93.65	122.298	43.836	2.790	10.25215	729.99	502.54	45.26	2.45	J
644.50	5.807	17.00	18.2557	93.12	122.907	43.836	2.804	10.67832	736.73	517.73	42.30	.92	F
600.64	5.877	17.58	18.4778	95.14	119.363	43.836	2.723	10.96328	739.74	529.18	39.79	.41	M
592.20	5.889	18.15	18.5	98.11	120	45.958	2.611	10.92771	736.18	537.20	37.04	–.48	A
592.20	5.889	18.50	18.5	100.00	122	45.958	2.655	10.79241	737.36	546.23	34.99	.16	M
592.20	5.889	18.50	18.5	100.00	124	45.958	2.698	10.68674	738.06	580.54	27.13	.10	J
637.01	6.372	20.00	20	100.00	126	44.268	2.846	10.81009	746.27	632.46	17.99	1.11	J
637.01	6.372	20.00	20	100.00	128	44.268	2.891	11.09049	755.58	650.22	16.20	1.25	A
637.01	6.372	20.00	20	100.00	130	44.268	2.937	11.37255	763.78	666.10	14.66	1.08	S
696.45	7.016	22.00	22	100.00	132	48.97	2.696	11.36997	778.93	675.43	15.32	1.98	O
696.45	7.016	22.00	22	100.00	134	48.97	2.736	11.26003	790.70	702.65	12.53	1.51	N
696.45	7.016	22.00	22	100.00	136	48.97	2.777	11.14577	797.11	712.52	11.87	.81	D

AVE CPI FOR 1985 = 754.2
ANN IR FOR 1985 = 24.79

PMOILDP = PMOILDP (–1) * (1 + .9332 * ((MONER – MONER (–1))/MONER (–1)))
PXPEXP = PXQUS*MONER/6.671
PM1 = PMQUSNF*MONER/6.671*TARIFF/1.45
ERBMERP =MERBM/MONER*100
TLGNP = MONTL/GNPSEM
TOTTGQ3 = TLGNP + TLGNP (–1) + TLGNP (–2) + TLGNP (–3)
CPI = –7.9569+(.042427*ERBMERP) + (.97448*LAGCPI1)–(.29286*LAGCPI2)
+ (.063435*PMOILDP)+(.028961*PX)+(7.2317*PMPES1)+(.98363*PCFOOD3L)
÷ (5.4133*TOTTGQ3)+(.92480*91–DAY)+(.60964*WLNANCR)÷(18.886*DUM85)

INFLATION FORECASTS FOR 1985
SCENARIO B/C

EQ5*
JUN–DEC

PMOILDP	PM1	MERBM	MONER	ERBMERP	MONTL	GNPSEM	TLGNP	TOTTGQ3	CPI 85	CPI 84	INF RATE (YEAR)	INF RATE (MONTH)	MO
650.18	6.037	17.78	18.9794	93.65	122.298	43.836	2.790	10.25215	729.99	502.54	45.26	2.45	J
644.50	5.807	17.00	18.2557	93.12	122.907	43.836	2.804	10.67832	736.73	517.73	42.30	.92	F
600.64	5.877	17.58	18.4778	95.14	119.363	43.836	2.723	10.96328	739.74	529.18	39.79	.41	M
592.20	5.889	18.15	18.5	98.11	120	45.958	2.611	10.92771	736.18	537.20	37.04	–.48	A
592.20	5.889	18.50	18.5	100.00	122	45.958	2.655	10.79241	737.36	546.23	34.99	.16	M
592.20	5.889	18.50	18.5	100.00	124	45.958	2.698	10.68674	738.06	580.54	27.13	.10	J
696.75	7.010	22.00	22	100.00	126	43.4	2.903	10.86702	756.81	632.46	19.66	2.54	J
696.75	7.010	22.00	22	100.00	128	43.4	2.949	11.20525	776.70	650.22	19.45	2.63	A
696.75	7.010	22.00	22	100.00	130	43.4	2.995	11.54604	792.44	666.10	18.97	2.03	S
755.86	7.654	24.00	24	100.00	132	48	2.75	11.59793	812.17	675.43	20.24	2.49	O
755.86	7.654	24.00	24	100.00	134	48	2.792	11.48637	826.18	702.65	17.58	1.73	N
755.86	7.654	24.00	24	100.00	136	48	2.833	11.37039	833.43	712.52	16.97	.88	D

AVE CPI FOR 1985 = 768.0
ANN IR FOR 1985 = 27.07

PMOILDP = PMOILDP (–1) * (1 + .9332 * ((MONER – MONER (–1))/MONER (–1)))
PXPEXP = PXQUS*MONER/6.671
PM1 = PMQUSNF*MONER/6.671*TARIFF/1.45
ERBMERP =MERBM/MONER*100
TLGNP = MONTL/GNPSEM
TOTTGQ3 = TLGNP + TLGNP (–1) + TLGNP (–2) + TLGNP (–3)
CPI = –7.9569+(.042427*ERBMERP) + (.97448*LAGCPI1)–(.29286*LAGCPI2)
+ (.063435*PMOILDP)+(.028961*PX)+(7.2317*PMPES1)+(.98363*PCFOOD3L)
+ (5.4133*TOTTGQ3)+(.92480*91–DAY)+(.60964*WLNANCR)+(18.886*DUM85